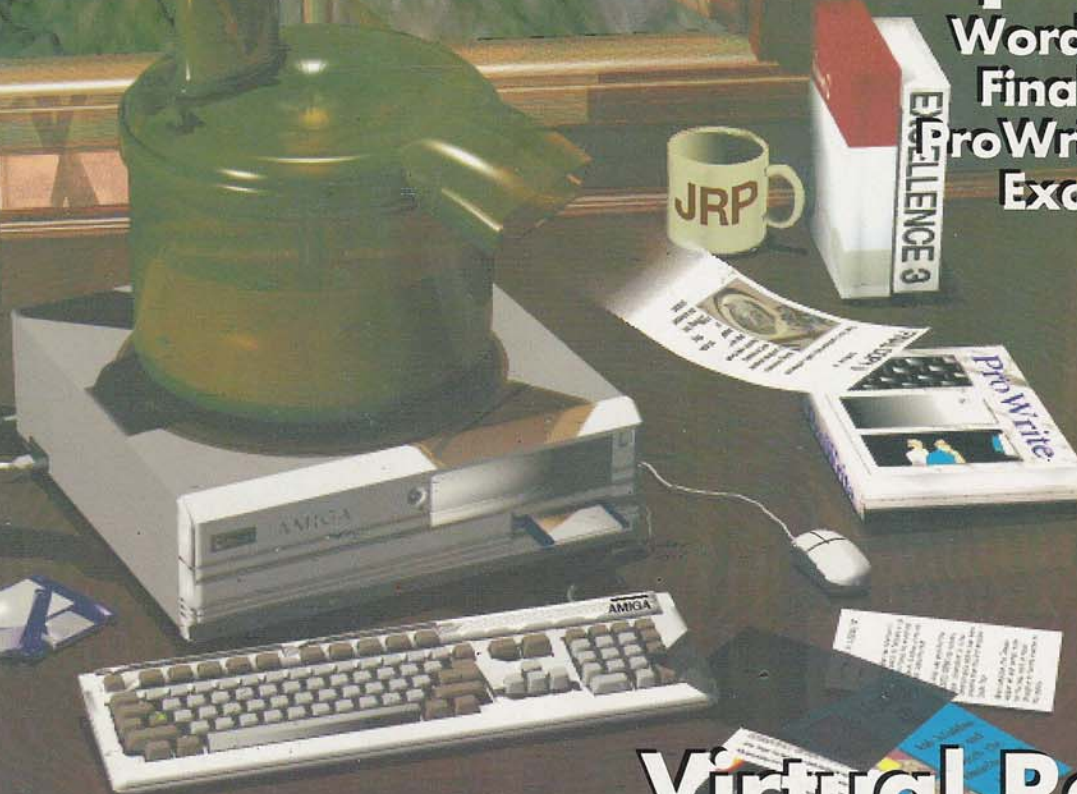


The Australian **COMMODORE & AMIGA** *Review*

Wordprocessing Comparison

Wordworth 2.0,
Final Copy 2.0,
ProWrite 3.3 and
Excellence 3.0

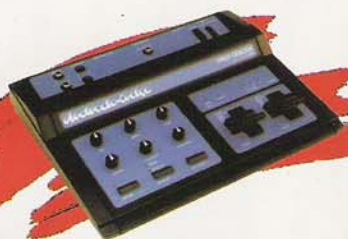


Virtual Reality

Amiga Based System in Australia

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All Our Regular Columns • Entertainment • News

New Prices, new Dealers, same Quality!



Sirius-Genlock

Semi professional genlock with fading, superimposing, bypass, RGB-control, autom. colorsplitter, composite to S-video and vice versa transcoding...

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Y-C-Genlock

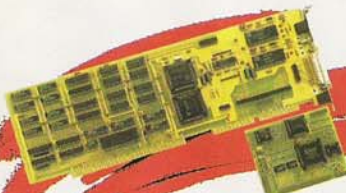
For composite and Y-C signals, excellent quality, fading, image controls, RGB-splitter, signal transcoding, runs with the A3000 flicker fixer...

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28 minutes about desktop video.
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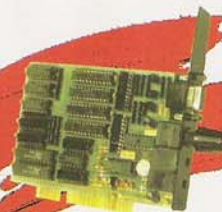
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Looking for a word processing package? Excellence!, Final Copy, Wordworth and Prowrite - which?

How to Connect Two Computers Using a Null Modem Cable

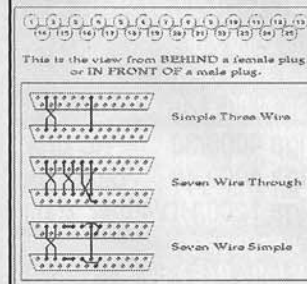
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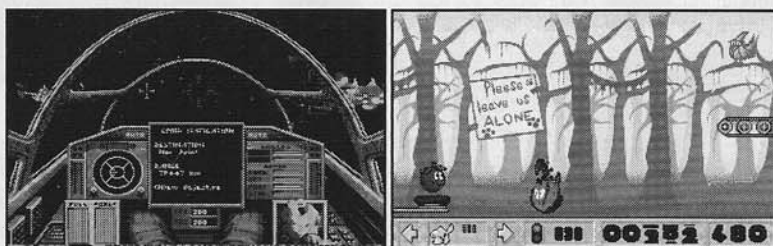
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Production: Brenda Powell

Layout: Tina Goins

Subscriptions / Back Issues:

Darrien Perry (02) 398 5111

Entertainment Editor: Phil Campbell

Advertising: Ken Longshaw

(02) 817 2509 Mobile 018 230 912

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Gary Chip	\$20
Paula Chip	\$54
CIA 8520	\$24.99

Editorial

Walking around PC '93 I couldn't help but feel very satisfied owning an Amiga. All around me the latest 486s were pooling their combined muscle to impress upon visitors that multimedia was the way of the future. However, upon close inspection I felt like I had taken a trip down memory lane. Amiga is still king in the multimedia arena.



The new AGA based machines have not caught developers sleeping. Already there are AGA version of many popular programs shipping or about to ship. As we went to press, *Professional Page 4.0 AGA* arrived along with *Deluxe Paint AGA*. ASDG announced that *Art Department 2.x* already supports AGA - surprise, surprise.

A newcomer to the painting stakes is also due any day now. *Brilliance* is a full AGA paint program with a difference. It can edit 24-bit images, providing you a HAM8 view of the display, but maintaining a full 16.8 million colour version. Perfect for desktop publishing. Next month we plan to review as many AGA packages as we can get our hands on.

Of course, many owners will be keen to know when the first AGA games will be arriving. Well, as yet we haven't actually got our hands on any, but news is that several are on the way. The A1200 is selling well in Europe and America, so software companies are moving quickly to support this fab new platform.

Enough of the future, what's inside this issue? Well, as is traditional ever so often, we've compared the leading WYSIWYG wordprocessors in a mammoth head to head comparison. All the big names are there, and hopefully the article will make your choice a lot easier. It's interesting there is no clear winner - all four programs have their strengths and weaknesses.

Probably the toughest thing about getting a straight answer on these programs is price. You see, the situation with Amiga software distribution in Australia has changed dramatically over the past year. Most large dealers now import product directly from overseas. This means that getting support is tougher unless you're dealing with a very knowledgeable reseller. Getting upgrades is virtually impossible. On the up side, direct importing has led to lower prices.

For years we've all complained about pricing. Now we've got lower prices it will be interesting to see whether the number of complaints about support increase or not.

Andrew Farrell

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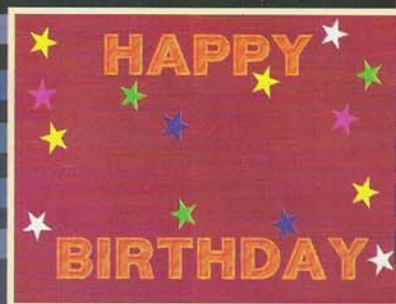
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G-Lock's six video control panels enable you to perform a wide array of special effects on still or motion video including ...

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- ▶ High-quality keying effects with bitplane or chroma keying.
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- ▶ Treble and bass equalization.
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UPDATE COLUMN

First we must apologise. We put a list of "Specials" in our Update Column to celebrate the 10th Anniversary of ACAR but, unfortunately, the same list was not sent out in time to our retailers. They should, however, have ordered in any of the "Specials" that you required but if you have had any problems please contact us on (02) 748 4700.

For C64 owners we are pleased to announce that we have now got stock of Prime Hits Vol 1.1, Prime Hits Vol 1.2 and Family Classics. We have also received for the first time Jeopardy and Jeopardy Junior on C64, so rush into your nearest retailer for these. These latter come from Gametek, the same people that do Wheel of Fortune and Family Feud.

Amiga users - there may be new readers amongst you who have recently bought an Amiga 1200 (or Amiga 600 or 500 for that matter). Please feel free to contact us on the above phone number to get a full list of our very wide range of Amiga products. By the way, let me remind you about Wordworth 2. There is no doubt that this is the most brilliant and easy to use word processor ever released for the Amiga and, frankly, it is as good as many desktop publishing packages. Please note that if you have any word processor you can upgrade to Wordworth 1.1 for \$106, and if you own any Wordworth you can upgrade to Wordworth 2 for \$150. These prices include P & P. Let me make this clear - if you have any old processor you can upgrade to Wordworth 2 via Wordworth 1 if you like for a total of \$256, a saving of \$70-odd on the price of Wordworth 2.

Again and again we hear Amiga owners who are desperately looking for a long life top quality Mouse for their Amiga. If you insist on the Champ you will certainly not go wrong. Also remember that Pactronics has Auto Kickstart Switches, 2 Meg Ram Expansion Boards and the new 86 Pin Expansion Board which allows you to run a hard disk or CD together with another peripheral, eg. Action Replay, or whatever, ie. you basically have a double adaptor.


Finally, let me remind you that we have three Hand Scanners for the Amiga - the Datascan, the Alfascan and the Golden Image, and we believe that there will be a colour version of the Alfascan available in the next couple of months.

STOP PRESS

We have just received stock of the Vidi 12 for the Amiga, the definitive Frame Grabber with RGB Splitter built in. This is good enough to be used by professional desktop publishers.

P.S. Did you know that the Lapcat allows you to download in both directions through the Amstrad NC100 Notepad to your Amiga?

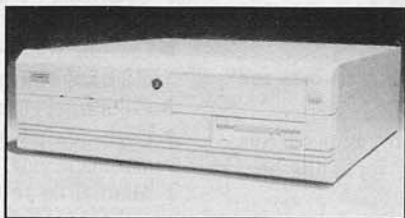
Pactronics Pty Ltd, 98 Carrarvon St, Silverwater, NSW (02) 748 4700

 **Pactronics**

Ram Rumbles

Commodore to Launch '030 A4000

Thanks to MVB Computers for this hot information straight from the horse's mouth. Apparently quite by accident a new A4000 has slipped through the distribution channels and arrived downunder. It's an '030 based A4000 - a hint of things to come - and it retails for ... ready for this ... under \$3,000! Now that's great news. An AGA based full 32-bit machine which replaces the A3000 for under \$3,000. Of course, you all knew the A3000 is no longer available anyway, didn't you?



Cheaper '030 model should be available now for under \$3000

Spottings

Yet another installment of Amiga sightings - at work or in the media. Keep them rolling in loyal fans of spotting the mighty Amiga. You will all be duly rewarded in fame and glory.

VR Amiga Spotting

Whilst at Melbourne's very popular Chadstone Shopping Centre, I spotted a Virtuality Machine which, I believe I

read somewhere, runs on an Amiga. I confirmed my suspicions and established that there was an A3000 lurking beneath the hi-tech-looking exterior. Admittedly the game looked fairly basic (monitors were set up to display to the public the game in progress) but it was awe-inspiring to see the Amiga in action for the public.

*David Mosca
Mount Waverley*

Ed: Thanks Dave, see our article on Virtual Reality in this issue for more inside information.

Amigas on Neighbours, Yet Again

Hey Ed! I thought it might interest you to know I have an Amiga sighting for you! On an episode of *Neighbours* (ahem, yes sorry to say), I saw our favourite Amiga 600 being used. Cool huh? Hmmm. The Cult of Eternal Amiga Users grows forever larger. I even read once that certain Iraqi armies had been using A500s to train pilots using flight sims before the Gulf War.

Whadda ya say, how about a GVP A530 40MHz Turbo HD for my troubles? Hey, can't blame me for trying. Of course, my address is up the top just in case. Ciao.

*Ian Ross
Fig Tree Pocket*

Ed: Why sorry Ian, we can't spare an accelerator. Will an A4000 do? No! You want to wait for the A5000 ... okay, well you'll have to enter again to be in the running. Thanks for the spotting.

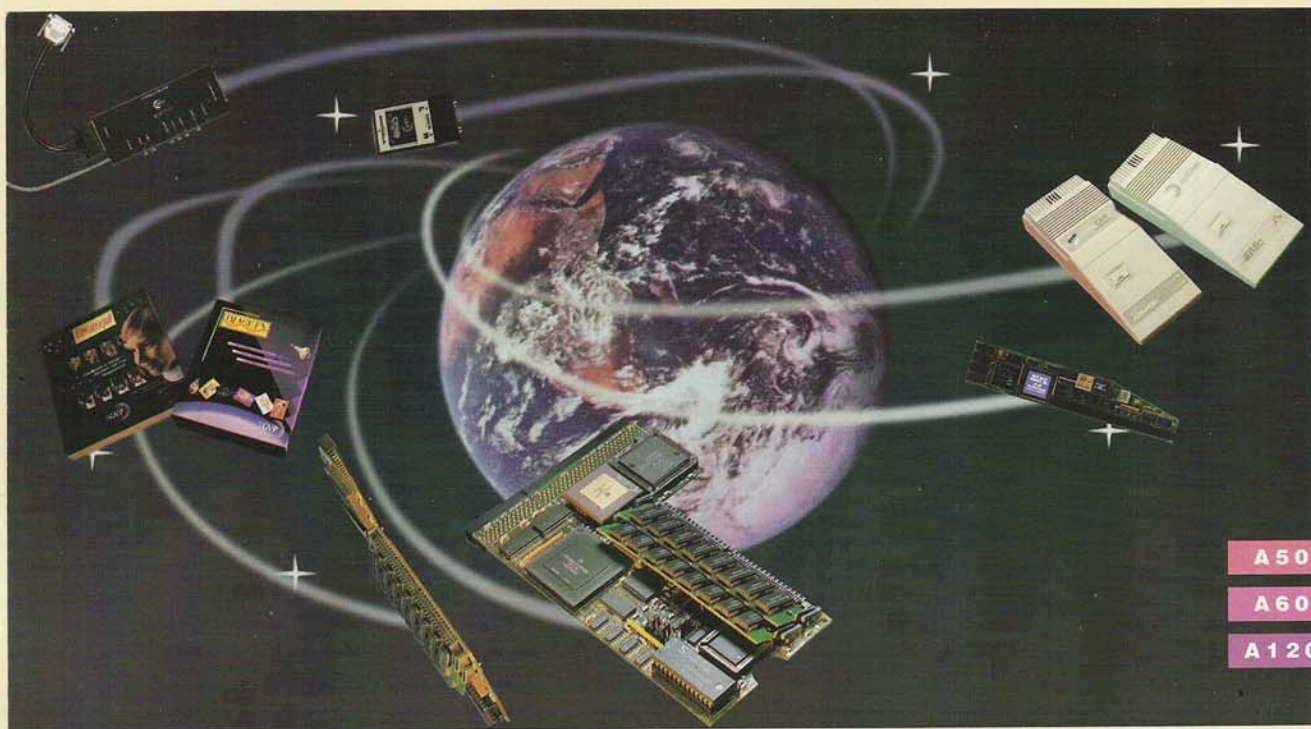
Hinch + CDTV

During a recent Hinch program, Sally Ann Atkinson was campaigning for the seat of Ranken in Brisbane. During one of her television appearances, she was singing along to the famous song *My Darling Clementine* on a CDTV + Karaoke disc.

PS: Keep up the great work. Your magazine is the best value, and best reading I have ever seen!

*Nathan Gottle
Hammondville*

Ed: Hey, thanks Nathan. The team here at ACAR are all devoted CDTV Karaoke singers too. In between time we churn out *Commodore Reviews*.



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A 1200

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- Unique mini-slot for further expandability.

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- Fits in the mini-slot of the A530 Turbo or A500HD8+ to emulate a "286-16" PC. MS-DOS/Windows compatible.

- 512K dedicated PC memory + Amiga memory sharing, CGA-VGA mono display emulation, 80C287 FPU socket.

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Imagine 3.0

Imagine 2.0 was released more than a year ago now, and the next version, 3.0, is well on the way to completion, incorporating many user requests. The final release date should be sometime in March, according to the programmers.

There will be a new manual, with all kinds of new tutorials and indexes galore. In addition, *Imagine* users will be able to use Bones - Moving contiguous objects without the need for joints; Real Time 3D movements in the Stage - in other words you can see the camera move and what it sees as it does move, and by moving the camera you can create smooth spline paths with only a simple command; Brush and Texture Tackling, so as the object moves and scales or whatever you do to it, the image sticks to the triangles not just the brush axis; Sound Tracking in the action Editor; Pop Up Action bar in the Stage Editor; access to individual objects of a group in the stage; Graphical interface for Ease in and out along a path; Twist, Taper, Bend, Shear, Taper and other deformations; much better anti aliasing; Shadows in Scanline; JPEG Compression; AA chip set support; new row of user buttons at the bottom of the various editors; Macros; more powerful Forms editor; Post Production Animation Tools; New Terrain Editor; Texturator. That ought to do you for the time being eh?

Miracle Keyboard Stands!

These stands have been specially designed for the length of the Miracle educational keyboard to provide added stability. The stand allows more leg room than comparable products, and may be adjusted to seven different height positions. When not in use, the stand can be folded for easy storage.

RRP for the stand is \$89.00; the current introductory price is \$69.00.

Song Collection Volume 1 and 2 are also still available.

The Miracle Keyboard Stand can be purchased from Mindscape direct for \$69.00.

Please make cheques payable to: Mindscape International Pty Ltd, 5/6 Gladstone Rd, Castle Hill NSW 2154 or telephone: (02) 899 2277.

GVP A1230-Turbo

The A1230-Turbo is a 40MHz 68EC030-based accelerator with 32-bit RAM expansion capabilities for the Amiga 1200 computer. It can be installed quickly and easily inside the expansion bay located on the bottom of the A1200 computer, and installation, according to GVP, won't void the Commodore warranty.

How they manage this is not clear, since the A1200 trapdoor's design requires you to remove the top casing to install anything that wants the whole connector - or so it seems.

An optional Math Coprocessor (FPU) can be added to the A1230 to dramatically improve operations. The A1230 has two SIMM sockets for 32-bit RAM Expansion, and any combination of 1MB, 4MB or 16MB SIMMS may be used. This means that the A1230-Turbo can support 0MB, 1MB, 2MB, 4MB, 5MB, 8MB, 16MB, 17MB, 20MB, or 32MB of RAM!

For more information contact Power Peripherals on (03) 532 8553.

GVP Fang - A1200 Expansion

Fang is an expansion for the A1200 with 32-bit RAM expansion capabilities, SCSI interface, and math coprocessor option. It installs inside the

expansion bay located on the bottom of the A1200 computer and extends out through the rear option port.

A new design technique makes the A1200's SCSI interface the fastest SCSI interface ever designed by GVP, with a theoretical maximum sustained transfer rate of 7.14MBs per second! An optional Math Coprocessor (FPU) can be added to Fang to dramatically improve floating-point operations.

The FPU can run at either the system clock speed of 14MHz, or a separate clock can be added to Fang to allow for faster FPUs. Using two standard GVP SIMM 32-1MB SIMMs, Fang can support up to 2MB of 32-bit, 60ns AutoConfig FAST RAM; using two standard GVP SIMM 32-4MB SIMMs, Fang can support up to 8MB; all running at zero wait states. For more information contact Power Peripherals on (03) 532 8553.

VistaPro 3.0

Users of *VistaPro 3.0* have been raving about its remarkable new features, such as AGA support, natural looking 3D vegetation, advanced fractal texturing, easy to use and improved clouds, 3D stereo viewing capability and quickstart preferences.

The new three-dimensional vegetation allows individually shaded leaves as well as a choice of point-and-click oak trees, pine trees, palm trees, cactus, sage-brush and grass. The advanced fractal landscape texturing creates very realistic rock surfaces. The new version also supports the easy addition of waterfalls, buildings and roads to your landscapes - which can be generated in left and right images for three-dimensional viewing.

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Carsmear by Mike Vunck

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The Derringer remaps Kickstart versions 1.2, 1.3 or 2.04
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CSA say the multi-layer, surface mount design enhances
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Letters TO THE EDITOR

Each month we will publish the most interesting letters we receive. Think of it as an open forum where you can view your opinions, share ideas or ask questions. Around half a page is a good length. The contents may be edited for brevity, accuracy or legality. If you don't wish your name and suburb to appear, please say so at the end of your letter.

A570 or a Faster 68000?

I am about to buy a Commodore A570 CD ROM Drive. I own a standard Amiga 500, 512KB under the hood and a A501 in the trapdoor, with a Fatter Agnus and WB1.3.

I have had this unit for two years and it has served me perfectly until about six months ago ... The problem is that the "Joy 2" has failed, to explain in more detail is simple: It thinks the joystick is pointing to the left, all the time. This happens even when the joystick is disconnected. On all my programs; it must be the hardware! It has to be.

My other predicament is that; after buying the A570 I will be flat broke! I get \$15 a week (I'm 14 and work for my parents) and I would like to buy an accelerator, before doing something stupid I would like to ask; is the 68000

replaceable with a 68000 but with a higher clock speed (eg stock 68000 running at 50MHz or more?).

From your articles I have learned that the '000 can be replaced with a '010 using a "software driver", my question here is the same: can you use a 50MHz 68010 instead of a "normal" one?

I'm sure I've already taken up heaps of time already. So until I write again.

**R Marks
Alice Springs**

Ed: A man of little means should be careful in spending his hard earned money. Do not waste your precious dollars on a 68010 or any such similar device. The speed increase is minimal. Sorry, there is no such thing as a 50Mhz 68000. I suggest you save hard for a while and then look seriously at trading up to the Amiga 1200. Put your A570 on hold - you'll get better value from a faster computer with more colours than a limited CD-ROM drive, the only applications for which will send you broke.

68010 and Connecting the C64

I have two problems which I would like you help me solve.

The first is accelerating my Amiga (A2000HD), I've read about the 68010 microprocessor in your magazine, and how it can be used as a plug compatible replacement for the 68000. How do you install the 68010, do you need extra

software? Where do you get it from (both software and 68010) and what advantages does it offer?

The second question is how do I connect my C64 to my Amiga?

Keep up the good work on a great magazine.

**J Adcock
Charleville**

Ed: Once again, I would advise to steer clear of the 68010 unless you're mad keen on seeing a very slight increase in speed. We're talking barely noticable here, folks.

On the C64 front, a serial interface for your C64 plus a null-modem cable (see elsewhere in this issue) will do the trick. Then you can exchange data using a terminal program at each end.

Monitor Dilemma

A couple of simple questions for you. Firstly, I am currently forced to use a laptop IBM compatible for my college work and am wondering if it is possible to hook up my RGB monitor (a 1081) to it in some way.

Also can you tell me of any PD printer drivers for the Canon BJ10EX. I am using an Epson driver but want full 360 x 360 resolution.

**David Mosca
Mount Waverly**

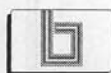
Ed: Your 1084 will not work with the VGA output of the laptop. The simple reason is the laptop outputs a video image which is sent more times per second than your Amiga. So you need a monitor which can keep up. The 1084 cannot. For your monitor at home to work on both machines you would need a small adaptor plug and a Multisync monitor, which can sync to the different display rates of both machines. You could use your new Multisync monitor on an A3000 or any of the new Amigas to obtain a flicker free display.

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Wordprocessing

The Big Guns, Head to Head!

Excellence!, Final Copy, Wordworth and ProWrite

Looking for a word processing package? Just bought one and wonder how it compares to the others? Wondering whether you should obtain that latest upgrade to your existing package or change to another? Barry Caudle investigates.

This review looks at four of the top end word processors for the Amiga, compares their features and rates them in many areas against each other. At the end of this comparison, you'll be well armed to make a decision as to which package best suits your needs.

Installation

Excellence! comes with its own hard disk install program which copies all the necessary files to the hard disk and adds the required assigns to the startup file specified by the user. For floppy users, if you wish to install the postscript fonts supplied to your Workbench or fonts disk a utility is provided for this task. One feature only found in *Excellence!* is a utility to check the integrity of the installed *Excellence!* files.

Final Copy II uses Commodore's installer program to install it on a hard disk. For floppy users there are two System disks supplied, one for Workbench 1.3 and another for Workbench 2.0. This makes *Final Copy II* the easiest program for these users since no font copying or other installation activity is required.

ProWrite also uses Commodore's installer program for installation on a hard disk. Floppy users will have to do some font installation to obtain all the font features of this program, a system mover utility is provided for this purpose.

Wordworth has its own hard disk install program. It requires a fair amount of space in your fonts drawer, if there is not enough space the install will fail. There is also an install program for installation on floppy disks so *Wordworth* can be used on this type of system.

Winners: *Final Copy II* and *ProWrite* have the best hard disk install programs. There are three levels of user interface (I prefer the expert level) and the option to write an install log file, which is great if any problems are encountered or to see what has been copied where.

General Setup

All the wordprocessors offer requesters for basic program preference options such as units of measurement, auto save options and colours.

Excellence!

The preferences requester is under the Project menu Preferences option.

It has **Miscellaneous options:** for Language (of the dictionary), Measurement (inches or centimetres), Cursor blink rate and error signal. **Document options:** for Auto Save time and or Warn time interval, Backup Levels (1 to 99), Icons for files and Auto Untitled whether to open an untitled window when the program is loaded. **Files/Paths options:** for the dictionary, glossary, Swap File and default Font and Size.

Display Configuration options: Hires, Hires-Interlaced, Productivity and A2024. **Colours and Palette:** for the number (maximum 16) and hues of the different colours. **Grammar:** to set the types of errors you do or don't want the grammar checker to look for. **Speech:** to configure and test how the vocalise menu option will speak the document. Once you have set the options they may be Saved as the default or Used in the current document.

Final Copy II

The preferences requester is under the Project menu Preferences option.

Startup preferences are the first to be set since the requester appears every time the program is loaded until a default is saved. Types of settings include **Screen Type options:** use workbench, a new screen or ask at startup. **New Screen options:** interlaced, non-interlaced or same as workbench. **Number of Colours:** for the number of colours the program will use (2, 4, 8 or 16).

Display Preferences controls many different parameters. **Screen DPI:** has settings for horizontal and vertical resolution (in dots per inch) which allows for accurate matching of the on screen display to suit your monitor. **Page Guides:** show or hide grey lines to define print area, edit area, header/footer area and columns. **Rulers options:** top only, left and top or no rulers. **Measure options:** inches, metric (centimetres) or

pica (there are six picas to the inch). **IFF On Screen Colours:** controls how graphics display on screen, options are, NTSC, light grey or colour. **WB Document Colour:** is used to set the background or paper colour if *Final Copy II* is opened on a Workbench screen.

ASCII File Input/Output preferences controls how new line characters and blank lines are handled when reading or writing ASCII text files.

Speller preferences has options for the size of the ram dictionary (ie how much of the dictionary will be kept in ram) and the caches which hold recently used or skipped words. Auto suggest may also be turned on or off.

Hyphenation preferences has settings for on or off and whether to assign memory to the hyphenation program.

Document preferences include the default tab spacing, type of character used for page numbering, decimal character, time format, date format and date order.

Document Colour and Screen Colour preferences controls the hue of colours and which colours are assigned to program screen elements.

All the preferences may be saved as defaults or used in the current document.

Prowrite

The preferences requester is under the Edit menu Preferences option.

Open & Save is the first preferences requester. **Saving options** include: icons for files, make backups, auto save and the time between saves. **Opening options** are: show only prowrite or all files.

General preferences covers a number of areas. **Unit of measurement:** inches or centimetres. **Error notification:** flash screen, beep or both. **Typing mode:** insert or type over. **Insertion point** blinking: slow, fast or off. The last is **General:** Full clipboard support on or off and Cache pictures on or off. **Paper colour** and **Screen colour** preferences: are for setting the background or paper colour and changing the hue of screen colours.

Edit menu Item Formats is where you change the type of character for page numbering, first page number, time

format and date format.

The **View** menu is where you select to show page guides, the vertical and or horizontal ruler and the ruler units; inch, cm, P 10, P 12, pica or points.

Using the Project Menu Settings save or save as option, settings may be saved to the default preferences file or an alternate preferences file. A previously saved setting may be recalled by using the load option from this menu. Alternatively settings may be just used in the current document.

Wordworth

The preferences requester is under the *Wordworth* menu Preferences option.

Display options include: Tool bar on or off, rulers vertical and/or horizontal on or off and Scroll bar vertical and/or horizontal on or off. **Screen mode options:** Use Workbench or Custom screen, Resolution Medium or High, Colours 2, 4, 8 or 16, Change workbench colours yes or no, Files Save backups on or off, save icons on or off, Timed save on or off and time between saves. Drawer in which the dictionary and thesaurus are located, cursor blink speed and decimal character.

The **Document** menu is where you find the options to change the type of character for page numbering, first page number, time format and date format.

The settings may be saved to the default *Wordworth* preferences file or to another file. To load a preference setting when starting *Wordworth* click on the appropriate icon instead of the *Wordworth* icon.

Winner: *Final Copy II* has the most complete set of preferences of any of the programs in the one menu area.

Page Setup

Excellence!

Project menu Page Setup option. **Page options** include; width, height, first page number and pitch (pitch is related to printing). There are no default page sizes for different standard sheets.

Margin options include; top, bottom, header, footer, left and right. Fac-

ing pages, when set swaps the right and left margins settings for correct binding on pages facing each other.

Footnotes: may be auto numbered and the starting number specified.

Columns: from one to eight snaking columns may be specified with a minimum column width of 1/4". The spacing between or gutter is also definable.

The page setup may be saved as a default or used in the current document.

Final Copy II

Project Menu Page Setup option. **Default page** sizes options are; US Letter, US Legal, A4, B5 with Custom for user defined sizes.

Print Area: to specify the limits at top, bottom, left and right of the page where your printer can print. This is a great help when using a cut sheet feed printer.

Edit Area: with margin options as above to define the working area of the document.

Master Page: to define header and footer areas.

Pages: define if a title page is required, whether left/right or facing pages are required and the first page number.

Columns: can be from one to six with a definable gutter.

The page setup may be saved as a default or used in the current document.

Prowrite

Project Menu, Page Setup option. The defined printer is at the top of the requester. **Default page** size options are; US Letter, US Legal, A4, Wide Carriage and Custom for user defined sizes.

Reduce or Enlarge scales the screen display and out put within the defined page size between 25% and 400%.

Print density from 1 to 7 depending on your printer and Orientation, portrait or landscape can be selected. **Aspect Adjusted** when set ensures graphics such as circles print correctly. **No Gaps Between Pages** when not set controls whether text or graphics will print within 1/2" of the top or bottom of the page.

The other page setup options are on the Document Menu, Layout option. Margins can be set for top, bottom, left, right and binding. The binding margin

is added to the left or alternatively the right or left margin when Odd/Even or facing pages is selected. A Title Page option is also available. Columns may be from 1 to 10 with a definable gutter and snaking or side by side columns may be selected.

Page setup may be saved using the Project Menu Settings, Save option.

Wordworth

Document Menu, Page Layout option. **Page size** options are; A3, A4, A5, US Letter, US Legal, Wide Tractor and Custom. Custom will be used regularly in *Wordworth* since all the "A" size defaults have errors in them when compared to Australian Standards, the US sizes are okay. **Margins** can be set for; left, right, top, bottom, header and footer. Facing pages and show margins can also be turned on or off. **Columns** can be from 1 to 32 with a definable gutter but the number of columns you can fit on a page depends upon the page width (typically 10 on an A4 page). **Units of Measure** can also be selected from; inches, centimetres, picas, points, pixels, pitch10, pitch12 and pitch15.

These settings may be used in the current document or saved to a preferences file.

Winner: There is not much to choose between any of the programs as far as page setup is concerned.

Formatting and Editing a Document

Paragraph formatting is handled similarly in all programs as far as the ruler is concerned. Tabs of different types may be placed along the ruler where required and there are icons for text justification, left, right, centre, full and paragraph line spacing. *Prowrite* only offers single, 1 1/2 and double line spacing, *Final Copy II* has icons for these as well as variable spacing. *Wordworth* has icons for single or double spacing while *Excellence!* has a gadget for variable as well as single, double, triple or quadruple spacing. *Prowrite* and *Wordworth* have an icon for a space after a para-

graph while *Prowrite* also has one for a space before. Paragraph indenting, hanging or normal may be set on the ruler for all programs. All the programs have methods to copy the format of a paragraph and apply it to another paragraph or paragraphs.

Final Copy II and *Wordworth* both have paragraph formatting requesters which offer a convenient alternative to the ruler especially for initial paragraph setup.

Final Copy II's Paragraph item is on the Text menu.

Values for left, right and first Indent may be entered. Line spacing of single, 1 1/2, double or variable may be set and if variable is selected it takes its spacing from the "Leading" value set on the Text, Leading menu option. Text Alignment options as per the ruler of left, right, centre and full can be set. Automatic Hyphenation and the hot zone in which it becomes active can be specified, these options are also available on the ruler. Once the settings have been selected they can be set as a default or used in the current document.

Wordworth's Paragraph item is on the Format menu. Alignment can be set to left, centre, right and justified the same as on the ruler. Indent values for left, right and first line can be set with a mixed option as above. Line spacing options are, auto single, auto 1 1/2, auto double and custom, with custom a value in points may be specified. There are also similar line spacing options for 6 lpi and 8 lpi pitch when using internal printer fonts. Space before and or space after may be set at line height or a cus-

tom value. Allow hyphenation when set controls whether the text in a paragraph can be hyphenated when hyphenation is turned on. Keep lines together when set forces all the text in a paragraph onto a new page or into a new column when a page or column break occurs within it. Tabs may also have there default value set and leader allows you to choose the character to pad tabs with. A mixed option is available for all settings which leaves the current paragraph settings unchanged.

Excellence! has menu options for keeping text together or allowing to split and can also pad tabs with characters. *Final Copy II* and *Prowrite* have options to change the decimal marker like *Wordworth* can.

Both *Excellence!* and *Wordworth* have tool bars. There are text formatting icons for plain, bold, italic, and underline styles. A font selection icon, with *Excellence!* this icon even shows the font name and point size. *Wordworth* also has icons for cut, copy and paste, print document and colour palette.

Final Copy II has a Styles menu option with this option up to 16 styles can be stored. Styles are named and can define paragraph settings, tab settings and type settings. This is the most powerful formatting option in any of the programs in this review.

Winners: All programs offer similar editing options - with the usual cut, copy and paste, select all and erase. All but *Final Copy II* have an undo option and a revert to saved file option, *Excellence!* even has a revert to backup option.

System Requirements

Excellence! requires Workbench 1.2 or higher and at least 1 MB of memory, two floppy drives or a hard drive are recommended.

Final Copy II requires Workbench 1.3.3 or higher, 1 MB memory and two floppy drives or a hard drive. On a hard drive it will require at least 2.5 MB of free space for installation.

Prowrite requires Workbench 1.2 or higher, 1MB memory and two floppy

drives or a hard drive. It also supports Workbench 3.0's new features.

Wordworth requires Workbench 1.3, 2 or 3, 1.5 MB memory and two floppy drives or a hard drive. On a hard drive it will require at about 4 MB of free space for installation.

NB: All testing was performed using Workbench 2.0. Some options described may not be available under earlier Workbench releases.

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Fonts

Excellence! uses all standard Amiga bit mapped or Workbench 2.0 outline fonts, it comes with four postscript fonts which may also be used on any other printer. There is a utility supplied to convert the *ProPage* postscript bit mapped fonts for use by *Excellence!*

Final Copy II uses proprietary outline fonts and these are the only type of font it can use. There are six general purpose fonts and 29 compatible with standard laser printer fonts supplied with the program. The postscript fonts work equally well on other types of printers. Softwood offer four more sets of fonts for *Final Copy II* with a total of some 100 fonts in the full set.

Prowrite uses all standard Amiga bit mapped or Workbench 2.0 outline fonts, it comes with four postscript fonts to replace the ones supplied with Workbench. There are also fonts supplied for use with its high quality print and special fonts for use with dot matrix print-

ers. *ProPage* postscript bit mapped fonts may be used directly by *Prowrite*.

Wordworth uses all standard Amiga bit mapped or Workbench 2.0 outline fonts. There are also printer specific fonts supplied for dot matrix printers and laser printers and a Digita colour font on the fonts disk. Last but not least there is Intellifont support with 17 Agfa Compugraphic fonts for high quality printing. Compatible Compugraphic fonts from other sources can be copied into *Wordworth's* Intellifont drawer and made available to *Wordworth* with a supplied utility.

Winners: When using outline or fancy fonts at a point size you would probably use to write with, all the programs suffered from a lack of readability on screen. Twelve point Times, which is larger than the text in this magazine, is too small to read easily on the screen.

Final Copy II is the clearest and also has the advantage of being able to

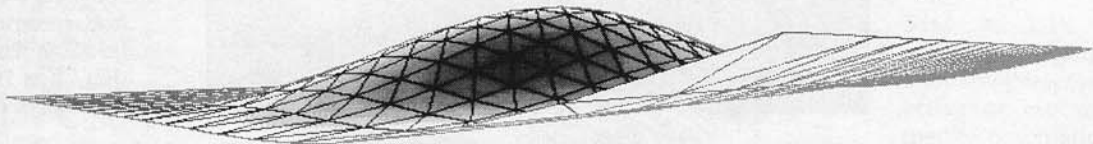
change the page view from 25% to 400% of normal size. *Wordworth* has a neat feature called quick screen which changes all the text to a very readable quick rendering font which doesn't change the actual document font. With *Final Copy II* you can even change the width of a font and there is a Type Specs requester in which all type characteristics can be set and stored as a default.

Graphics

Excellence! can import IFF graphics, insert them in a document, move them about and rescale them. It treats a graphic as a single text character with no real text flow options.

Final Copy II can import all types of IFF graphics up to 24 bit. The graphic may be moved and scaled with accurate positioning being available through a requester in which positioning values can be entered. Text flow may be verti-

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cal and even have a border drawn around it, or ragged to the left or right with a definable stand off distance for the ragged flow. The graphic may stored in the document or have a link back to where it's stored. Structured drawing tools are available to draw lines, circles, ovals, boxes and round cornered boxes. Line weight can be specified when an element is drawn or changed later. Boxes may be empty or have a solid coloured fill in them. All drawing elements may be moved with an option of a position requester for accurate location. There is a depth menu option for arranging the order of graphics and hence what shows in front of what.

Prowrite can import standard IFF graphics, half-brite and ham graphics. Graphics can be moved and scaled with vertical as well as ragged right or left text flow options. The stand off for ragged text flow can be specified.

Wordworth's Amiga graphics options are standard IFF, half-brite and ham.

Other formats are BMP, PCX (messyDos formats) and EPS or encapsulated postscript the latter only available if you use the postscript printer option. Graphics can be moved and scaled with text flow options as above. The graphic can be stored in the document or have a hot or cool link to where it's stored. If a hot link is used any changes made to the graphic are immediately reflected in the *Wordworth* document.

Other Features

All the programs have options for headers and footers. *Final Copy II* has a master page feature with an option for facing master pages. A master page contains the headers and footers if any plus any other text or graphics which you want to appear on ever page of the document. *Excellence!* is the only one which offers footnotes which may be converted to endnotes with a supplied Arexx

macro. *Wordworth* has endnotes and there is an Arexx macro for endnotes with *Prowrite*. Both *Excellence!* and *Wordworth* have index and table of contents generation menu options, with *Wordworth* having more built in formatting options for the index or table of contents.

Mail merge is a feature of all programs with *Excellence!* only offering comma separated field data files, the others also support tab separated field data file. *Wordworth* has more types of data format including their own Mail Shot program, *Superbase* and custom for user defined formats. There is also an option to say whether or not the file has header records.

Prowrite and *Wordworth* have a column break option for use with multiple columns which is similar to page breaks only for columns. *Prowrite* columns may also feature side by side text instead of snaking text.

All have document summary options

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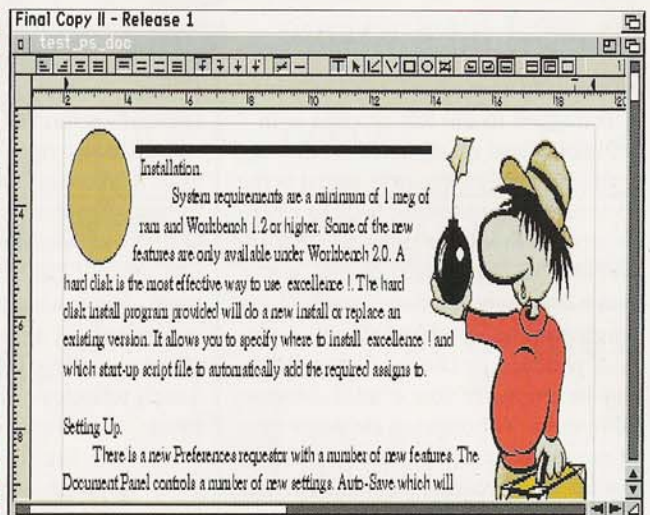
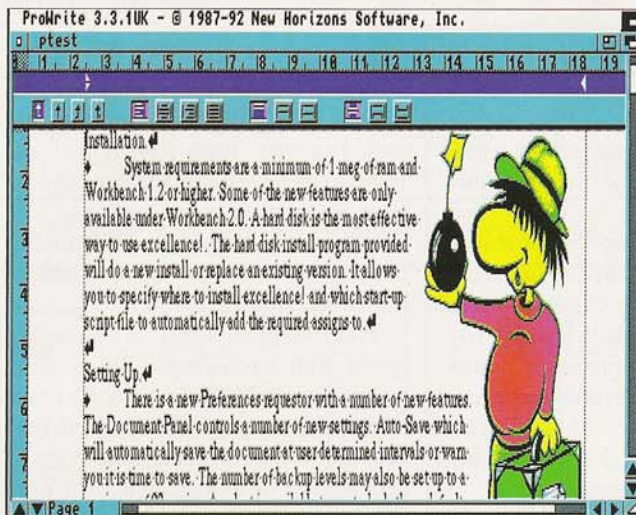
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for word count of the document. *Excellence!* has its grammar checker which checks the documents for grammar, context of words, readability level, passive voice and comparison against four other types of document.

Excellence! and *Wordworth* have insert literal options for inserting characters which are not on the keyboard. Both feature glossary options for storing often used phrases for insertion into documents. The glossary in *Excellence!* can also be used to create macros for often used key stroke or menu selection combinations or for the call up of Arexx macros.

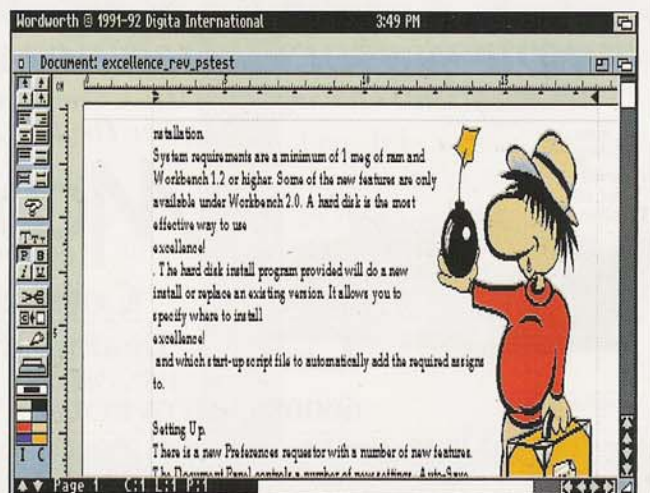
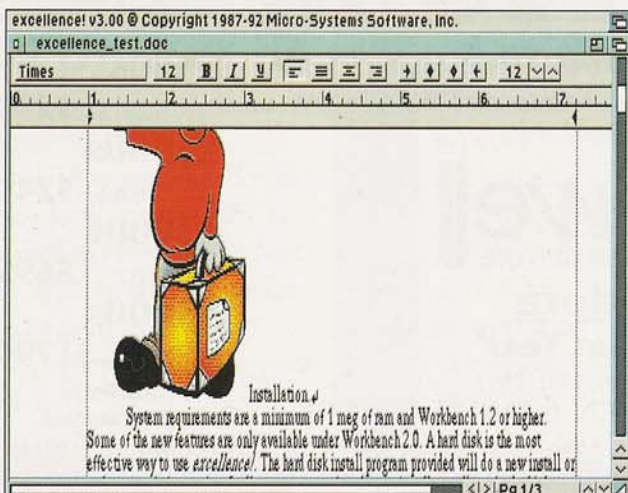
Wordworth is the only program without Arexx support or macros. *Excellence!* can use its own macro language or Arexx macros from within the program. *Final Copy II* and *Prowrite* can use macros written in Arexx from within the program.

Excellence! and *Prowrite* have options to insert text files or other documents in their own format into the current document. *Prowrite* has a bookmark option to mark a point in the document for easy return to, there can be only one. *Excellence!* and *Wordworth* allow multiple bookmarks, *Excellence!*'s you can only step through while *Wordworth*'s are named so any one can be moved to.

All have dictionaries and thesauruses with *Prowrite* using its own and the others all using Proximity Technology. *Prowrite*'s dictionary is UK English and *Wordworth* has the Collins English dictionary. Both *Excellence!* and *Final Copy II* have US English dictionaries but there is a UK English version of *Final Copy II* using the Collins dictionary. *Final Copy II*'s dictionary has a feature which checks words for incorrect capitalisation.

Prowrite's thesaurus has only synonyms and only provides a list of alternate words. *Wordworth* is similar but also gives the parts of speech of the suggestions. *Final Copy II* has only synonyms but gives the parts of speech and meaning of all the suggestions. *Excellence!* is similar to *Final Copy II* but also has antonyms.

Wordworth can load or save documents in other file formats. It worked well with messyDos *Word Perfect* files and *Prowrite* files both ways but *Excellence!* and *Transwrite* files were not 100%. *Prowrite* has a File Convert program which worked well with *Excellence!* files but the *Final Copy II* option did not work with *Final Copy II* files. *Final Copy II* can load *Prowrite* files. *Prowrite* has handy DTP interface features, it can load and save documents in *ProPage* text format which works well. It also has a Hot Links menu option.



C64 / 128 LEISURE

Output

All have postscript printing when Postscript compatible fonts are used. *Final Copy II* and *Wordworth* both have more detail about postscript printing in their manuals with the former being the best. *Wordworth's* print setup requester has rotate and scale options, while *Final Copy II* has a landscape or portrait option, they are the only ones to offer a file requester when printing to a file. There is nothing to pick between any of them as far as Postscript output quality is concerned.

Dot matrix printing in graphic print mode is a different story with *Final Copy II* and *Wordworth* (when using the Intellifont option) in a class of their own. There is nothing to pick between either of them as far as print speed or print quality go.

Wordworth even has a draft mode for quick printouts when printing in this mode. *Prowrite's* high quality mode is a little better in clarity than its normal

mode when suitable fonts are used.

When printing in NLQ or Draft mode *Final Copy II* doesn't paginate correctly or print a range of pages correctly. All the others will paginate correctly if the specified font or fonts for this type of printing are used.

Excellence! is the only one which can print graphics and text when using NLQ mode.

With *Wordworth* if you choose one print method and then want to change to another then the fonting of the document has to change. This is a pain if you setup a document for postscript printing and then want to print it on your dot matrix printer since the document loses its original fonting and pagination.

Final Copy II and *Wordworth* have small problems with maintaining the exact numeric value keyed into requesters which effects the accuracy of layout. But they have the best manuals since they are complete rewrites for these releases.

Conclusions

If you're looking for quality printing, the ability to draw things and incorporate graphics in documents then *Final Copy II* is probably the choice for you. It has the most graphics options and dot matrix and postscript output are similar in appearance.

Excellence! is the only one to have a grammar checker built in plus the ability to use your hard disk as extra memory for very large documents. For serious writing with simple requirements for graphics it's probably the best choice.

For a word processor to interface to your DTP program then *Prowrite* is the obvious choice. *Wordworth* would be the choice if you must work with files from a messyDos system. It has a lot of good features if you only use one type of printing.

Regardless of which one you choose they all work well and on my accelerated Amiga there is nothing to pick between them in speed of operation. □

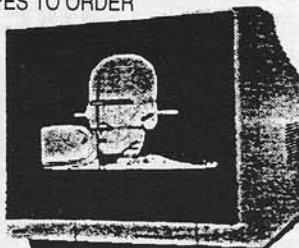
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How to Connect Two Computers using a null modem cable

by Daniel Rutter

Much though we all love our Amigas, not everyone uses them. Many people use IBM compatible machines or Macs. Thus it frequently becomes necessary for we users of the thinking person's PC to transfer data to these other worthy but less interesting platforms.

One way of doing so is with 720k IBM format MS-DOS disks, which have the advantage of being easily portable and almost universally accepted, but if you've got a lot of data to transfer and the machines are close together (like, in the same room) there's something mildly ridiculous about doing it in 720k chunks.

A Cable Solution

The simplest solution to this problem is the null modem cable. This is a piece of wire which connects the serial ports of two computers directly, without using a modem or telephone line in between, allowing data to be transferred quickly with any terminal program.

You can also hook up quite a few games for two player mode with a null modem cable - various flight simulators, *Populous* and *Populous II* (which is a great way to destroy a friendship), and several others.

Unfortunately, it's hard to get null modem cables off the shelf, at least at a reasonable price and with some decent length. This article will show you how to do it yourself, without needing a degree in electronics.

Parts Required

What you will need are two 25 pin D connectors. The serial port on the Amiga 1000 is fe-

male, and needs a male connector; all other Amigas have male serial ports, which take female connectors. Most IBMs have female serial ports. A female port has little holes, a male port has little pins.

For Amiga-Amiga connections (since there aren't a lot of 1000s still around), buy two female connectors for about \$2 each at a place like Jaycar Electronics. You will also need two back shells - the plastic bit that goes around the connector. These cost from \$2 to \$3.50 each depending on the quality.

Next on the shopping list is some cable. Depending on the version of the cable you decide to build, you'll need either three or seven strands, which means buying six or nine core shielded computer cable (\$1.50 or \$1.90/m). You can make the cable quite long before attenuation and noise become a problem - three metres will work okay and give you plenty of flexibility in placing your machines.

You'll also need a fine tipped soldering iron (1mm or less), since the solder

sockets on the backs of the connectors are quite small. Not to mention, predictably, some solder.

The easiest way to solder into D connectors is to heat the little socket, melt a SMALL amount of solder into it, and then carefully insert the tightly twisted wire into the molten solder. It's a little unconventional, but it avoids blobs and bridges. Still, a solder sucker or some desoldering braid might be helpful.

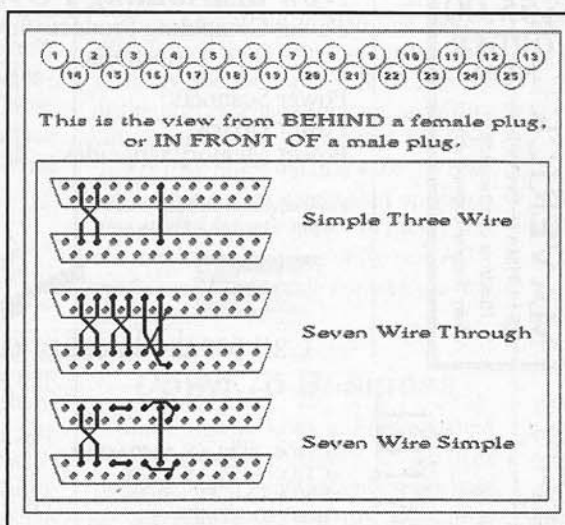
As you can see, the price for the cable so far is still well under \$20 - shop bought cables can cost twice as much and aren't as long.

Useful Tools

The soldering hardware to go along with it, including a solder sucker, should cost around \$50, and has plenty of other uses fixing and making basic electronics. You can save BIG money by doing simple jobs yourself, and it doesn't take the brain of a rocket scientist.

To make sure you can connect to any machine - the cable as listed is for inter-Amiga connection only, you might want to invest in a couple of male-male gender changers (\$8.50 each), and maybe even a 25 to nine pin adaptor for machines, like my notebook computer, that use the smaller serial port. 25 pin is the standard, though.

There are three basic null modem designs - you might need to modify them if you're mucking about with specialised machines, but these three will cover the vast bulk of applications. Their wiring diagrams are shown in the accompanying illustration. Note that the two wire colours in the picture are just to show separate



wires, so you don't connect the wrong things.

The simplest is the three wire design. This connects the two ground pins (pin 7) together, and connects Transmit Data (TX) on each connector to Receive Data (RX) on the other. This type of cable is easy to wire:

2————>3
3————>2
7————>7

The only problem is that if one of the machines wants a DTR (Data Terminal Ready) or DSR (Data Set Ready) signal, it'll freeze; likewise if it wants Request To Send (RTS) or Clear To Send (CTS) signals. This happens on Amigas if you're using BaudBandit.device instead of serial.device for extra speed, for example. This necessitates the full seven wire design, which is wired as follows:

2————>3
3————>2
4————>5

5————>4
6————>20
7————>7
20————>6

This should keep just about any system happy - but there's an awful lot of soldering involved. So you might like to use the "cheating" version, which doesn't actually connect any more lines between the machines than the simple three wire, but makes it look to each machine as if there's always another machine on the line - even if it's unconnected. There's no good reason for the DTR/DSR/RTS/CTS stuff anyway in most null modem applications. This cable is wired thus:

2————>3
3————>2
4—\ /—4
5—\ /—5
7————>7
6—\ /—6
8—\ /—8
20—\ /—20

RS232 Serial Signal Table

Signal	Abbrev.	Pin
Frame Ground		1
Transmit Data	TX	2
Receive Data	RX	3
Request To Send	RTS	4
Clear To Send	CTS	5
Data Set Ready	DSR	6
Ground	GND	7
Carrier Detect	CD	8
Data Terminal Ready	DTR	20
Ring Indicator	RI	22

Note that pins four and five are connected together ON THE SAME PLUG, as are six, eight and 20. You can connect four and five with a small piece of wire or a blob of solder. The set of three is a little harder - connect about 20mm of wire to each one, twist the free ends together and solder them, insulating the end as well to avoid unfortunate shorts. I've been using one of these cables for a while now - it works fine. □

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Getting Started with Scripting

Part 2

Following on from our 1993 Amiga Annual, here's part two of a short tutorial on using AmigaDOS script files by David Stofberg.

AmigaDOS scripting can be a powerful means of automating many tasks and can provide solutions to problems related to the workings of the system. The large number of system commands optionally combined with other utilities and commands can result in a pleasant and consistent environment for programming. Many commands provide good flexibility and structural integrity and when combined in the correct manner can perform operations in an efficient manner.

In order to understand or realise the sort of flexibility provided we must look at the availability of some common commands and see how they can be combined to form a script. Let's take the following segment for example which contains a fairly large and diverse cross-section of commands. We won't go into the details of each command line as yet but the general idea should be able to be visualised:

```
Alias normal="echo *e[0m noline"
Normal
Echo "What stack size to use for this Shell? "
noline
Failat 11
Stack >nil: ?
Echo "List of processes:"
Status full
Echo "What priority for this Shell? (" noline
Alias underline="echo *e[4m noline"
Underline
Echo "status" noline
Normal
Echo ") : " noline
Failat 21
Changetaskpri >nil: ?
```

This is actually just a segment of a Shell-Startup script of my own which simplifies and automates the setting up

of an environment for use within every new Shell or CLI which is started. This is pretty low-level system manipulation type stuff so the actual operation does not really need to be explained at least at this stage.

A number of different techniques were utilised including command aliasing, command redirection, template calling and ANSI manipulation. These are all fairly technical too, so at this stage it will just serve for example purposes. It should be seen though that the types of things which can be accomplished can be quite impressive.

Flow Control

There were no actual examples of control and conditional statements though but this is where some of the more useful, time saving and structural aspects become more obvious. Most programming languages have these types of commands and AmigaDOS scripting is no exception. Included among these statements are If, Else, Endif, Ask and Skip. These commands though unlike other AmigaDOS commands are only designed to be used within scripts. The reasons for this should be quite obvious.

DOS Commands

Most other commands though are those which can be equally as well used in normal CLI or Shell operations. Among such commands are Rename, Copy, Dir, List, Search and many more normal AmigaDOS commands. These types of commands serve more as ways of automating operations. However they can be used in special and more powerful ways in combination with other com-

mands and their outputs for example. This is where the first of the more technical aspects becomes apparent - redirection or piping.

Piping is the exchange of data between commands, files, devices, other commands and such things. Let's say for example we want to keep a list of all the files in a directory and then determine if a particular file is amongst these. What we could do is use the Dir command and redirect its output to a temporary file and then use Search to determine the file's existence. The coding segment for such an operation would look something like this:

```
Dir >ram:picsdir DH0:PD/pics
Search ram:picsdir MyAmiga.IFF
nonum
```

This is fairly basic and straightforward but is very effective for the purposes of the example. What the first command is saying is place the output of the Dir command in a file called "ram:picsdir" instead of the normal place the output would go - the screen or window in which the command is running. The directory of files to examine in this case is "DH0:PD/pics" which is just a common example directory name for placing pictures. The Search command then reads that output file to see if it can find the string "MyAmiga.IFF" within the Dir command's output.

Now the way in which this would be especially useful within a script is to test the result with what is called a return code. If the Search command actually found a file with that name it would simply post a return code of 0 but if the file was not found it would return a code 5.

The If command would be placed after the Search command and would use a number of words describing the severity of the command's failure. In this case the keyword would be "warn" meaning a return code of 5 - something which is not severe but nonetheless indicates a contrary situation to the command's default action or intent. This would be coded such as:

```
If warn
Echo "there was no such file in the directory!"
Else
Echo "the file was found in the directory."
Ask "now do you wish to view the picture?"
```

```

If warn
  CD DH0:PD/pics
  SYS:Utilities/Display MyAmiga.IFF
Endif
Endif

```

As it can be seen, the Ask command also returns a code 5 "warn" if the user responds with "y" or "yes". The If command would fall through to the next Endif or Else if the response was "n" or "no" or the user simply pressed the Return key - with 0 being the return code.

This has generally dealt with a basic scripting redirection example and how the result of the redirection can be used for decision-making purposes. What follows is a more powerful example and utilisation of redirection. Let's also look at command substitution and template calling next whereby commands can be incorporated into other commands and a file's contents can be used as parameters for another's. Here is an example of such an operation:

```

Ask "do you wish to list a particular file?" If warn
  Lab getname
  Echo "Enter the filename: " noline
  Echo >NIL: <* to ram:lfile ?
  Failat 21
  List "type ram:lfile" nohead
  If error
    Echo "there's no such file silly - try again!"
    Skip back getname
  Endif
Endif

```

In the second Echo command, the question mark (?) indicates to provide a usage template for the command. Since we don't actually want to find out how to use it, we perform a little trick whereby we get rid of the template itself by redirecting it to the AmigaDOS NIL: device. This simply discards the template then we take the input from the keyboard or console itself denoted by a star (*) character. The command is still waiting though for the user to provide parameters to the template which will be passed to a file called "ram:lfile" using the "to" parameter. The input from the user will be what goes into that file.

The command substitution is then effected into the List command itself using the two open single quote (') characters to enclose the other AmigaDOS command. In this case the command is to Type the file which includes the previ-

ously input filename into the command line as the filename parameter for the List command itself.

What is actually happening is that all that the List command is getting between the double quotes (") is the name of the file which was input before to the Echo command. So if the user had input "fred" then the List command would simply receive "fred" from AmigaDOS after substitution as its filename parameter as if it was simply typed like that.

Most commands can be placed within other commands but some would obviously not be useful, practical or even legal to AmigaDOS. Such commands would be the script-only conditionals as mentioned above. The only ones that make any sense are those that will actually produce output to be used as a valid parameter for the command using them.

These would be commands usually outputting a single line of data. The example used above involving taking user input via Echo, placing it in a file, then using it as input to another command as a filename parameter is among the most useful of purposes.

Lastly, we will address the simple but very useful Lab and Skip directives. These are used for controlling the flow of execution of the script as demonstrated in the last example. Lab simply sets up a name to be used as a reference for Skip. Almost any name can be used and include special characters such as question marks or exclamations.

The Skip command then uses that name to indicate where to branch to within the script. By default Skip will only jump forward through the script but if the "back" parameter is used, the search for the label will be in a backwards direction.

That takes care of most of the constructional characteristics of AmigaDOS scripting. There are a number of other factors involved which are more along the lines of extensions to the points raised in this tutorial. But with these basic underlying methodologies can result some very powerful and time-saving solutions to automation and system management. Further examination of relevant documentation will increase the understanding and knowledge of the construction of scripts and their components. □

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Almost real, and it's on the Amiga

Virtual Reality Today

by Greg Wall and John Pospisil

In our constant hunt for interesting applications of the Amiga, once again the mighty Motorola based power house has met with a fine application. Inside the latest in arcade style entertainment systems is, you guessed it, an Amiga 3000.

Virtual Reality (VR) has the potential to turn our lives upside down, revolutionising communications, entertainment, architecture, medicine, and even warfare within the next decade.

Like the 1980s, the 1990s will be a time that makes or breaks computer manufacturers. Companies that are quick to see future trends will reap the rewards.

Luckily for Amiga users, Commodore seems (maybe unintentionally) on the way to producing machines that will be capable of running convincing VR worlds within ten years. This raises the question: will the Amiga play a role in the development of VR in the coming decade? Let's look at what VR is, and where development is at the moment.

What is Virtual Reality?

VR allows people to interact with computers in a completely new way. Wearing a special helmet (Head Mounted Display) and glove (Data glove), the user is immersed in a three dimensional world generated by a computer. The term "virtual reality" comes from the illusion generated for the user, who sees the computer generated world in the same sense that he or she sees the physical world. In computer jargon, virtual refers to that which appears to be present, but isn't.

Until three years ago, most VR research was carried out in the United

States. Since then, Germany, France, and especially Japan have embarked on their own programs. Japan believes it will overtake America in the VR field, and would like to see itself as the provider of VR hardware and the US as the provider of VR software.

In America the leaders in VR research are VPL, Chapel Hill at the University of North Carolina and the Human Interface Technology laboratory at the University of Washington. These centres have close links to NASA, the US defence forces, Xerox, Autodesk, and Apple. In Japan, a consortium including Hitachi, Toshiba, Nippon Electronic Co. and Nippon Telephone and Telegraph are rushing to create commercially feasible VR systems.

Equipment

The data glove, manufactured by VPL, is the most popular input device for current VR systems. Optical fibre sensors on the glove detect how the hand is bending so that the computer can interpret the movements. Another sensor

detects the hand's position in space. A computer representation of the glove appears in the HMD, allowing the user to guide the hand.

The Head Mounted Display contains two small television screens; one for each eye. This allows the image generated by the computer to appear three dimensional to the user. The helmet prevents anything else from being seen, so that the user is completely immersed in the computer generated scene.

A sensor in the helmet tracks the position of the user's head, so that the computer can update the scene depending on where the user is looking. Users can manipulate objects by wearing a data glove. In an effort to overcome the limitations of Cathode Ray Tube (CRT) and Liquid Crystal Display (LCD) screens in HMDs, HIT laboratories are developing a system by which a laser scans an image directly onto the retina. The head of the team at HIT, Thomas A. Furness III, says "It's just a question of when it will happen."

Alternatives

There are two ways of applying Virtual Reality; telepresence and virtuality. Telepresence allows remote control of equipment, such as robots. Virtuality, on the other hand, allows users to experience worlds that are likely to be dangerous or expensive to experience in reality.

The US Navy is experimenting with telepresence. They have fitted a Jeep with a robot driver, which is linked by fibre



optic to an operator in a van. The operator sees everything the robot sees, and moves the robot's camera by moving his own head.

The University of North Carolina uses virtuality in a system in which architects can walk through buildings before they are built.

British company W Industries manufacture a VR arcade machine - the Virtuality 1000. The Virtuality 1000 uses an Amiga 3000, linked to a CD ROM and fast Texas Instruments maths co-processor. Virtual reality makes computer games more realistic than ever.

Leading gurus of the VR industry envision VR systems faster and more realistic than current systems. Jaron Lanier, the dread-locked, bearded founder and chief executive of VPL, sees VR as a new medium. Speaking at conference on computer graphics, Lanier said: "VR is shared and objectively present like the physical world, composable like a work of art, and as unlimited and harmless as a dream. When VR becomes widely available around the turn of the century, it will not be seen as a medium used within physical reality, but rather as an additional reality. VR opens up a new continent of ideas and possibilities. We have made the first steps on that continent."

Lanier sees VR as primarily a communications medium; the telephone of the future. He believes people will be able to call other people, and share virtual worlds through fibre optic networks.

Computer Hardware - Enter the Amiga

The main limitation on VR development at the moment is the hardware - researchers are waiting for computers to get smaller, cheaper and faster. A typical VR system costs around \$US250,000 and comprises two Silicon Graphics Iris computers, one for each eye, plus the dataglove and headset.

James Clark, chairman of Silicon Graphics in Mountain View, California envisions "a portable window into the virtual world" on most computers within four to five years.

Amigas are playing an important role in the development of VR. Amigas are

the centrepiece of the first commercially available VR arcade machines. Interest in Amigas in the VR field is strong. Eric Gullichsen, an ex Autodesk employee, who formed his own VR company, Sense 8 Corporation, likes the Amiga 3000.

The A3000's custom chips for graphics, video, sound and other functions, impress him, as do its high speed 32 bit connections with other systems. "The Amiga is designed for real time multimedia productions. Now we can integrate animation and video with VR," says Gullichsen.

The bad news for Amiga users is that current 68000 Amigas are not nearly fast enough to run convincing VR worlds, even with the power of the Amiga's graphics chips - but when VR systems start appearing in homes and offices at around the turn of the century, Commodore will be in a prime position to take advantage of the ensuing consumer stampede.

Commodore will have an updated, faster version of the Amiga 1200, a home computer which is affordable and graphically powerful, the ideal platform for a home VR system. Commodore announced at the Pasadena World of Commodore show, that it would be updating the Amiga range as soon as new technology became available.

This new attitude reflects the realisation that an information explosion is about to happen. To compete, Commodore will be quicker to adopt the latest technology and produce new machines. By doing this, and perhaps unintentionally, Commodore is keeping its foot in the door of the coming VR revolution.

Hands On a Real Amiga VR Game!

What's it like to play a virtual reality game? Well, it takes a little getting used to. You see, the idea behind virtual reality is to create an experience which is so believable it's virtually reality. Climbing inside the Virtual Reality unit, you strap on a large helmet, belt up and prepare to do battle.

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met. Having a separate screen for each eye allows a true stereo view of the landscape, giving a strong 3D feel.

A huge pterodactyl soaring high above you screeches warnings at you. Somewhere close a god-like voice is beckoning you into the game. Grabbing ferociously for your gun you take a defensive position as you scan the surrounding landscape for any moving objects. They ain't gonna get this little black duck without a fight.

Turning to your right you notice out of the corner of your eye someone running up at you from behind. You run blindly away and up a set of stairs to a higher level, you spin around only to find your opponent has you in his sights, gun aimed at your head. You hear him chuckle as he pulls the trigger. Suddenly you see yourself from outside as your body explodes into a million fragments.

Colours explode from all sides again as your computer generated overseer decides to reassemble your computer warrior again for another round. You have just entered the amazing world of Virtual Reality. A place where whole worlds are created before your very eyes, a place where, thanks to modern technology, you can actually climb inside the game world and be an active part of it.

Virtual Reality has Arrived

You have the ability to walk around, look around and see yourself and your surroundings as if you were there. You've probably all read about experience called Virtual Reality in magazines, possibly watched *The Lawnmower Man* on video and maybe even seen a special about it on TV.

The very first two units in Australia which turn this amazing concept into an entertainment device have arrived as a permanent fixture.

If you happen to live in Sydney, you will find these just a short drive from the city. But not at Timezone, or a Sydney branch of NASA!

In fact, the abode of this space age technology is none other than North Ryde RSL Club. Situated off Pittwater Road, North Ryde, this popular local club has

seen the potential of Virtual Reality as a crowd drawer.

Dactyl Nightmare

There are two separate games on offer here at present, the first is called *Dactyl Nightmare* and consists of a series of checker-board platforms. The largest platform is in the centre and is coloured blue and white. From this central platform are four sets of stairs leading up to another four red and white platforms. There are obstacles to avoid and hide behind, as well as several flying platforms that you can climb upon to move around.

Upon starting the game you are randomly placed on one of the five platforms, with the aim being to firstly find your opponent, and then, in a novel twist, obliterate him.



The joystick controls your movement, and your gun. Every eight shots, the mighty pterodactyl will attempt to grab you and drop you from a great height, unless dissuaded with a shower of hot lead.

One of the best things about VR is the ability to play head to head with friends. One of the things contained in the Visette is a microphone, directly linked to your opponent, allowing in-game conversation.

Legend Quest

The second game available is called *Legend Quest*. This is where the ability to communicate with the other player really becomes an advantage, because in this game you're on the same side.

You begin your journey inside a room with your partner in what looks like a castle. You need to look inside a magical mirror to gain access to the other levels. Then you will need to venture forth and fight your way past sword swinging skeletons and open the treasure chest. Here you both need to reach inside to pick up a larger and more powerful sword and also to gain extra points.

Working together as a team, you are able to warn your team mate of impending danger from evil forces, as well as help each other fight a band of goblins, find new trap doors and find the way through new passageways.

This game has much more depth than the simple blast-up, is genuinely addictive, and satisfyingly violent.

Hardware Specs

The basis of VR units is a set of 68040 A3000's, with two 34082 graphic boards and CD ROM drives as well as hard drives for mass data storage. The two VR units use Ethernet Local Area Networks to communicate with each other. The system has the ability to produce up to 30,000 independent, transformed, clipped, shaded polygons to create the feel of this 3D universe.

Conclusion

If you even vaguely enjoy the challenge of playing games, then this is certainly a game you MUST try, if only for the experience. The current cost of a go on the VR machines at the club is \$5 for four minutes. It isn't cheap but it is worth it even if you only try it once. The four minutes seem to last twenty!

There is also another option, get a heap of friends together or contact your local user group for a get together and hire out the unit on an hourly rate and all pitch in. There is also a deal going where you can have a meal in Splinters, a drink plus a go on the VR unit all for only \$10.00.

So if you're lucky enough to live in Sydney, for a few dollars you can experience this amazing computer generated world for yourself. If this technology exists now, just imagine what's around the corner. □

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Multiplot XLNe

If you are a science student or are involved in any sort of work requiring data to be graphed to determine intercepts, gradients etc. and you hate drawing graphs, then you must own Multiplot, says Darren Jones

Multiplot is a graphing program which takes data from a text file and plots them on the screen. This can then be printed on a printer or plotter using the highest resolution possible on the printer. A 9 pin printer provides a beautiful output.

Once the data is on the screen it can then be modified to your taste. A line of best fit can be selected which draws the line through the data and writes the equation of the line, providing gradient and intercepts to any number of significant figures required. There is even a curve fit which not only draws the curve but also provides a complicated equation of the line.

Error bars are fully accommodated and represented in the correct scientific presentation. Any number of data sets can be displayed on the screen. The axes are fully modifiable and can even be set to a Log function.

Toying with your Data

Editing is where the program excels. Like all data there is always a point which is vastly different from the rest, just hold down the Ctrl button and select the data point and then press delete. Addition points can be added to the graph ie when you wish to represent an intercept line to intersect the X or Y axis.

Basically the operation is as follows.

1. open the shell and type the name of the file
ed dataset1
2. once the editor is open the following is required

```
*TITLE* Data set 1
*Xlabel* Time
*Ylabel* Temperature
```

Title indicates that the next group of words will be the title. Xlabel will place Time on the X-axis and Ylabel on the Y-axis

3. Now leave a blank line. This tells *Multiplot* a new data set is to be entered. The default is that the left column is the Xdata ie time and the Ydata is temperature. If you make a mistake and put all the Xdata in the Ycolumn and vice versa, when you load *Multiplot* you will be asked which columns are which.

```
5.00 2.55
10.00 6.22
11.00 12.00
12 14.83
23.22 21
```

As you can see only a space is required to separate the columns. If you have more than one set of data then you will require a legend.

```
*legend* 1 mole of Iron sulphate
22 21.6
25 36.5
```

```
*legend* 2 moles of Iron sulphate
22 45.6
25 50.2
```

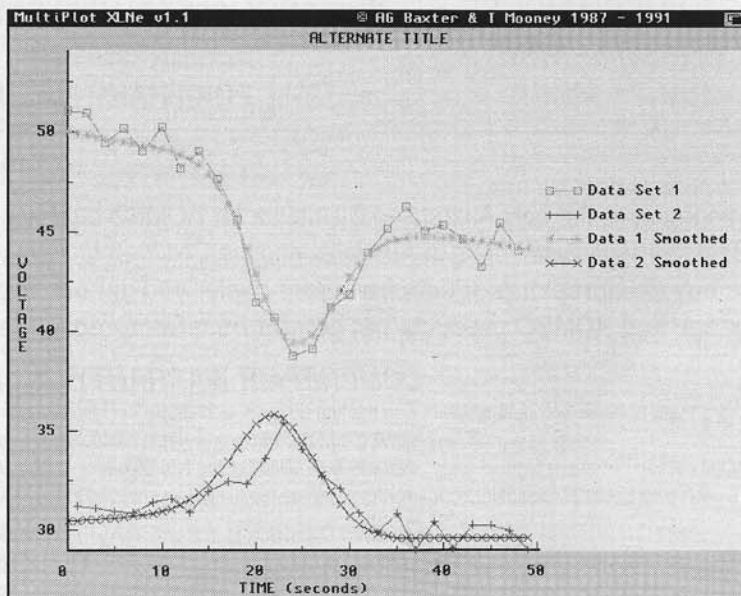
Multiplot will display the data in different colours and represent the points differently. The examples provided with the disk explain all this.

Furthermore if you are using scientific notation 6.02×10^{-3} is represented as 6.02e-3.

The file is then saved and *Multiplot* should now be loaded. The instructions for use are easy to understand but there are a lot of them. So I will highlight some points not clearly mentioned in the manual.

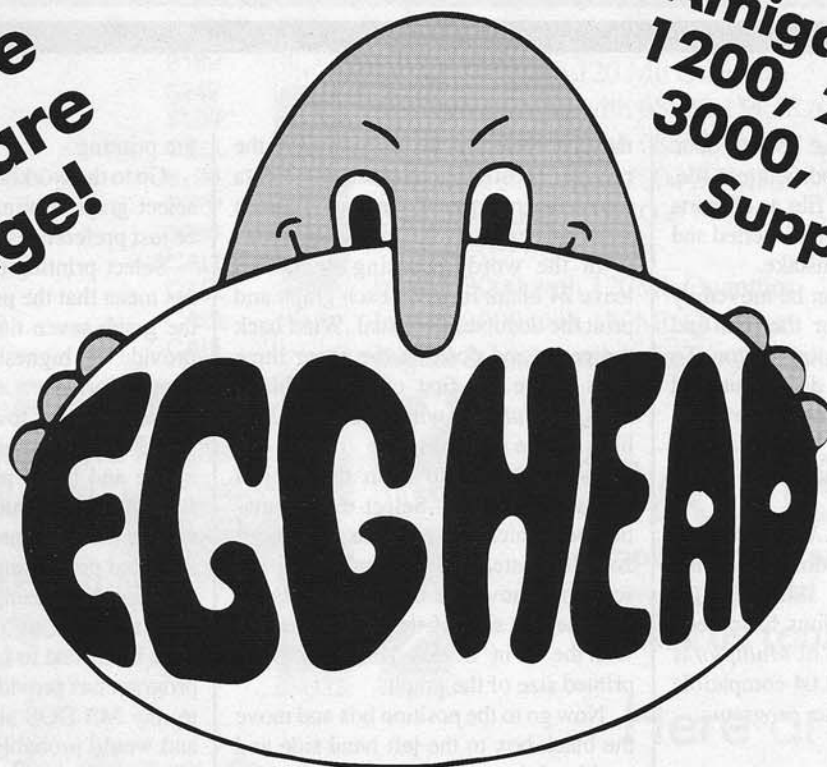
Clarification Needed

When the program is loaded a file requester is presented, select path and select the blank square, this displays the files in the current directory. Use Parent and Volume controls to move to the correct directory. The data will then load. Once the data has been modified



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to your taste, select save as and data. This will save it as a modified text file. Do not use the original file as all sorts of formatting information is inserted and you may have made a mistake.

Text on the screen can be moved by placing the pointer over the text and holding down the left mouse button. To find the coordinates of a data point hold down Ctrl and double click on the point. To find the coordinates not on a point hold down the Alt key and click on the screen.

Read the set-up of the *Multiplot* carefully as the printing is done using the PLT: device provided. All the bugs found in the older versions have been eliminated. This version of *Multiplot* is now fully WorkBench 2.04 compatible Multitasks well with other programs.

Printing

Saving the graph as an IFF is hopeless for the average wordprocessor as

the picture is full screen size so if the picture is resized then most of the data is lost. To incorporate the graph into the word processor do the following.

In the wordprocessing document leave 24 blank lines for each graph and print the document as usual. Wind back the paper and position the paper three lines above the first of the 24 blank lines (as *Multiplot* will send three blank lines before printing).

Select Printsetup from the Project menu in *Multiplot*. Select the orientation box which will print the graph horizontally instead of vertically. On the scale bar move the black control such that the left side of the block lines up with the 'e' in 'Scale'. This reduces the printed size of the graph.

Now go to the position box and move the black box to the left hand side and position it between the top and the bottom of the box, as the white box represents the page. Once the black box is at the top of the page you're ready to be-

gin printing.

Go to the workbench preferences and select graphic print (Workbench 2.04) or just preferences on Workbench 1.3.

Select printing density 7. This does not mean that the printer will print over the graph seven times, it means it will provide the highest resolution possible for your printer.

Now go back to *Multiplot*, and select print. The Plt device will convert the image and begin printing. If you have followed my instructions then the graph will be neatly printed in the gap left on the word processing document.

I have been using *Multiplot* for some time now for my data processing and have never had to fault the accuracy the program has provided. It is far superior to any MS-DOS shareware equivalent and would probably beat any commercial program.

Multiplot is on Fish Disk 572, available from your favourite public domain library. □

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Desktop Publishing Column

by Andrew Farrell

If you're into desktop publishing on the Amiga, this is the column for you. All the latest news, information and tips on using the more popular packages as well as sneak previews of new products.

Professional Page 4.0

I hoped *Professional Page 4.0* would have arrived by now. Alas, it was not to be. Although shipping in the USA, we've been ignored down under yet again. However, by the time you read this, *ProPage 4.0* will be on the streets. Look for a full review in our May issue.

Art Expression

After some time spent toying with *Art Expression*, I decided to hang off until next month for a full review. The reasons are two-fold. Firstly, as the program stands now, it does not work well with *Professional Page*. It's also reported to have problems working with *PageStream*. I have just received version 1.02 which fixes the *Pagestream* problems and will be testing it out before next month. So until then, my advice is to hang off on this baby.

Using an Output Bureau

There comes a time when your dot matrix printer simply will not do. And so you move up to the mighty laser printer. However, eventually it too starts to look a bit shabby. Many Amiga owners have run into brick

walls trying to get high quality output from Lino-typesetting service bureaus. The misinformed operators of some of these outfits presume the Amiga is some peculiar machine which they simply cannot handle.

Nothing could be further from the truth. It is a simple matter to provide the bureau with a postscript file, either via modem or on an MS-DOS or Macintosh disk. This file will behave just as well as a similar file from another platform such as the Macintosh or PC.

One bureau I can recommend who are very helpful in these matters is Lynos. They provide reasonable cost film and bromides from Amiga files.

For your information their Sydney telephone number is (02) 438 1000. I send files to them all the time via modem with no problems at all.

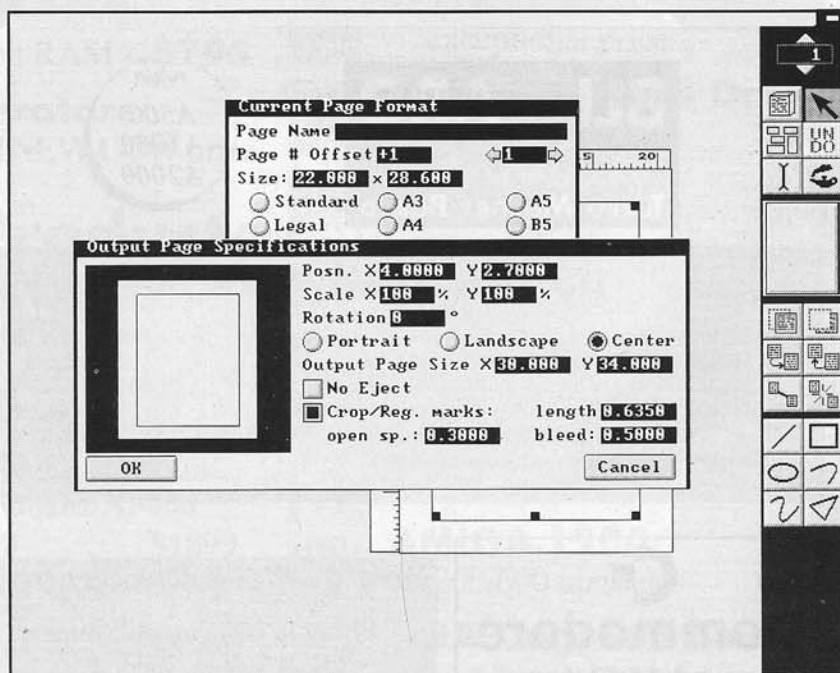
ProPage Software Failure on Quit

A number of *ProPage 3.0* users have reported a Software Error when quitting *Professional Page*. Apparently Gold Disk were not aware of the problem, and it is a little tricky to replicate. I've found it doesn't happen all the time and it only happens on some machines. The A2000/030 in the office seems prone to the error, whereas the A3000 has never once popped up this annoying error. If anyone can throw some more light on the subject I'm sure many other users would appreciate the help.

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Professional Page with the appropriate settings showing how to output a page with bleed for an advertisement in Commodore Review



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the paper, you must allow for what is called bleed. That is, the art work should extend outside of the actual print area.

For example, in this magazine a full page measures 210 x 276mm. If you plan on creating an advertisement which goes to the very edge of the page you should allow about 5mm of bleed.

This gives the printer a measure of tolerance for movement of the plates on the press and trimming of the page. You see, if the page does not land bang under your perfectly sized art work, there will be a white gap down one edge of the page. Very unsightly.

Professional Page and *Pagestream* both provide for full bleed differently. In *Professional Page* you need to work with a larger page from the outset. So, for a full page advertisement, start with a page 220 x 286mm. If you forget to

Keeping Your Designs Simple

As you move onto more complex tasks, the importance of keeping your page designs simple will become critical. I'm not talking simple in terms of design, although that's very important too, but simplicity in the way you achieve your page layout.

The more boxes you have on a page the clumsier making changes gets. The more type sizes and styles you fit in a box the harder it gets to make alterations. So as a rule, keep your page design simple by taking advantage of the software tools available to minimise the number of boxes required. Design with possible changes in mind.

In practice this means:

1. If you need a text box with a

border, use one box. Turn the box outline on and then create a box margin to move the text in away from the border. You now have one box containing the text and border which can easily be moved and resized.

2. Text of different type faces and sizes is best placed in a separate box. That way, these individual elements can quickly be altered, moved or deleted if need be.

3. Use style tags as much as possible to make universal changes easy.

4. Keep to two or three type faces to a page, and that includes point sizes. More will distract from your message making the information you're trying to communicate difficult to understand.

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do this and then realise later that you need full bleed, you will have to move all the page components across and down 5mm after you've increased the page size using Alter-Page-Current or Alt-C.

In Search of Fonts

Over the past six months, Amiga owners have been blessed with an increased number of fonts from both commercial and public domain sources. Both Gold Disk and Soft-Logik have published weighty lists of available typefaces and a huge number of Compugraphic and Adobe Type 1 fonts have made their way into the public domain.

The question arises as to which font type to use. The answer is Compugraphic. Although Adobe typefaces can be loaded directly into

PageStream and most can be converted for use in Professional Page, Compugraphic typefaces have a wider number of applications.

Under Workbench 2.x, Compugraphic fonts can be installed as system fonts. Programs like Deluxe Paint IV, WordWorth 2.0 and Scala can take advantage of these files to create any desired point size on the fly. Alternatively, using the system font manager (Fountain on earlier versions of WB2.x), it's easy to create bitmap equivalent of any CG font. This means they can then be used in any Amiga program which uses normal Amiga fonts, including most wordprocessors and paint programs.

Since CG fonts can be used by the system, and therefore by more programs, it makes sense to collect these rather than Adobe type faces. There are many if not more styles available

and sourcing them is becoming very simple. In fact, there are many public domain CG fonts available from libraries such as Megadisc and Prime Artifex.

Send your fonts too

One small tip. If you're sending a file to an output bureau, always include any fonts using the Include Fonts option in the output requestor. If you don't there are two possibilities. One is that the bureau won't have the font you're using. You'll end up with Courier, except the spacing will be completely wrong.

The other option is that the bureau will have your font, but it may be slightly different. Different spacing, kerning, size - whatever. Not quite as large a disaster, but best avoided. Always include fonts. □

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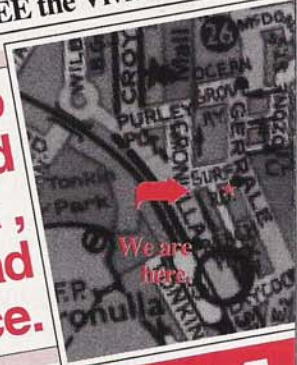
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HOT PD

Daniel Rutter keeps us up to date with the latest in almost free software.

The Amiga freely distributable software scene is on the up and up. The Amiga is now starting to see the same influx of commercial grade ShareWare games that struck the IBM world a couple of years ago, output of utilities is increasing in quantity and quality and Amiga PD libraries still charge about half as much per megabyte as their IBM equivalents!

All, however, is not sweetness and light. Fred Fish, compiler of the invaluable AmigaLibDisk library which as I write is up to 810 disks, has been losing subscribers to cheaper (and perfectly legal might I add) local sellers of his disks, who don't have to pay international mailing fees.

As he says, "It has reached the point where sometime in the next month or two I will make a decision about whether or not to shut down the library, since if there are insufficient incoming funds to meet the operating costs as well as pay for an occasional perk like a trip to an Amiga show once or twice a year, or some new hardware toy, there is little incentive to continue spending 20-30 hours a month running it".

Fred goes on to exhort user group presidents, PD house operators and similar people to take out a subscription to help keep the library going - and quite a few are doing just that, because a sub to Fred is the fastest way to get your Fish disks.

But Fred certainly ain't broke yet, and the recent crop of Fish disks contains some excellent stuff. The other month I promised to mention the good stuff from disks 771-810, so here it is - remember all the Fish disks contain much more stuff than I've mentioned here; I've just picked the highlights.

PKludge - AGA Mode Promotion

On Disk 771 there's *PKludge*, a mode

promotion commodity for AmigaDOS 3.0 which allows any graphic mode to be promoted to any other mode, keyed from the screen name or title, and resizing and moving screens during mode promotion. Graphic mode promotion is one of the major features of KS/WB3, and this utility makes it easy to get most programs to use uninterlaced modes even if they only know how to ask for interlace. Of course, its utility is rather limited if you don't have a monitor capable of displaying the 31kHz modes - a VGA or multiscan.

Detache - Kills Dud Files

Disk 773 contains *Detache*, a useful little utility which requires WB2 or higher and completely unlinks dud files from the file system - it doesn't delete them, it completely obliterates any pointers to that file. This lets your system get up and running again even if a floppy or hard disk has been totally bopped by a sudden power down or disk removal during a write operation! A much needed utility which will save much anguish - as long as your essential data wasn't in the corrupted file, of course. If that's

the case, it's disk editor time and good luck to you.

Quest - Questionnaire Builder

773 also contains *Quest*, a really good ARExx program (yes, that means you need ARExx to run it, folks), which asks questions from an easy to build questionnaire file and assigns points accordingly, allowing gotos around the file as well. *Quest* comes with the very funny Hacker Test, which if you're not interested in writing your own questionnaire is worth getting just by itself, just to see how much of a techno dweeb you really are. For what it's worth, I scored 819 points - Power User.

Kurve - Function Plotter

Disk 778 contains *Kurve*, a REALLY fast mathematical function plotter with many features and blisteringly fast rendering - it requires WB2 or 3.

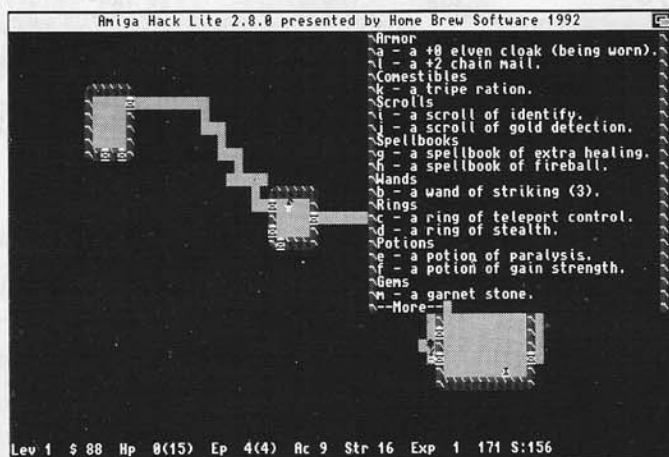
Plasma - AGA Fractal

Disk 779 has *Plasma*, one for the owners of the new AGA machines. It generates the gorgeous Plasma fractal, in the AGA 256 colour modes with full use of the 24 bit palette. Kick in the colour cycling and you've got something that'd give Jimi Hendrix a headache.

ABackup - Shareware HD Backup

Disk 780 features *ABackup*, a powerful ShareWare backup utility for hard

Hacklite



disk backup and file archiving. *ABackup*'s got a full Intuition interface, a "batch" mode, it can save and load file selections, handle high density floppies. If your backup needs don't involve 200Mb SCSI streaming tapes and similar exotica, and if you don't want a file recovery package into the bargain, this could well be the program for you. It's certainly worth a look!

WBVerlauf - AGA Backgrounds

Disk 781 contains *WBVerlauf*, which allows the owners of AGA machines to create a nice Copper background for a selectable colour, using the whole 16 million color range of the AGA chips. I've seen this one running on a 1200 and hugely cute it is - a vast improvement on the rather stripy effects of the previous 4096 colour attempts.

DirKing - Better Format Command

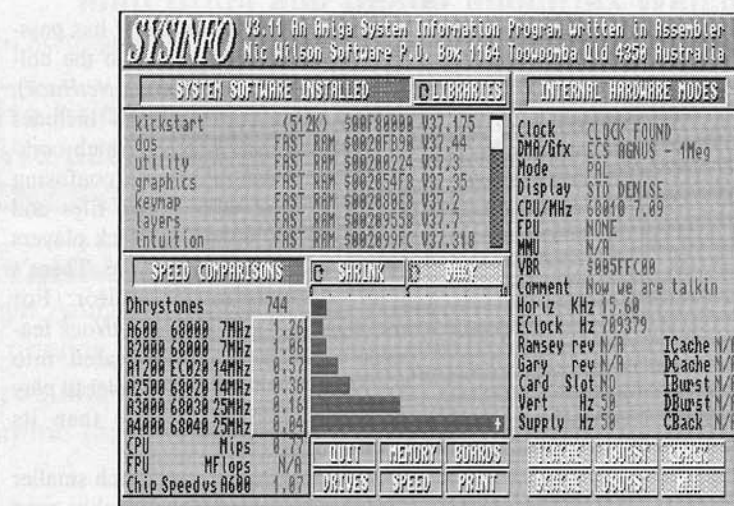
Disk 784 contains *DirKing*, a powerful replacement for the AmigaDOS List and Dir commands. It gives full control on the format of the directory listing and what information should be printed. The directory can be sorted on any field, or on several fields in the order you want. Basically, this is a program for all the people out there who actually LIKE usage descriptions that go on for 11 lines instead of the usual single line job!

Lyapunovia

Also on 784 is *Lyapunovia*, a mind bogglingly colourful fractal graphic program which (wait for it) ISN'T Mandelbrot! It comes with some demo pictures, and produces images reminiscent of torn metal, intergalactic nebulae and LSD influenced boiled lollies. Pointless but tasty.

Timing

Disk 785 contains *Timing*, a useful little program to clock the time between two events. The nice thing about *Timing* is that you can have as many concurrent timers running as you like - so you can measure the time since you booted the machine, the time since the



SysInfo

startup ended, the time since you last logged onto a given BBS and so on. Earthshaking it is not, but it comes in handy now and then.

UCD

On 785 there's also *UCD*, a ShareWare utility for changing the current directory. It scans a disk and builds a file containing information about the directory structure. It's only useful for hard disk users, but if you're sick of navigating around a million assigns and fiddly little directories, sacrificing a few kilobytes for the dirlist pays off.

Cheats

Disk 788 contains *Cheats*, 121 cheat text files for a wide variety of games. The main attraction for me is that this list contains a very good manual/spoiler file for the mighty PD dungeon game *Hack* (see below) in several of its incarnations - plus of course solutions for a load of other games.

MatchPlay

On 788 there's also *MatchPlay*, a small CLI program that enables experimenting with AmigaDOS pattern matching, so you can learn how to use the cryptic matching system without unwittingly deleting, renaming, copying or backing up 50 megabytes of files you never meant to touch. You give a pattern and a string as arguments and the

program determines if the pattern would have matched the string. Requires OS2.x.

Replex

Disk 791 contains *Replex*, which stands for REPLace EXecutable and lets you substitute program names that are about to be executed; for example if an icon default tool specifies "c:/MuchMore" and you prefer to use "c:/TextRead", you can have it defined as such, so you never have to change the icon. Handy.

SKsh

791 also contains *SKsh*, a Unix ksh like shell for the Amiga. A shell is a program which runs over the top of the CLI and gives much more powerful command line features - personally I use the older *CShell* but that's just because I'm used to it - *SKsh* is nice because many of its "built in" commands are actually separate files so you need only install as many as you use. *SKsh* requires WB2, and has way too many features to list here.

DateCheck

Disk 793 contains *DateCheck*, a Rexx program (remember - this means you need ARexx!) that validates the system date by comparing it to the date stored when *DateCheck* was last executed. If the system date is earlier or too much

later than the stored date, the user is notified by a requester. Hence you can spot those annoying moments when for reasons unknown your clock goes berserk - mine does about once a month and no, it's NOT a virus - and catch the fault nice and quick without stuffing up file dates all over the place.

UnDelete

Disk 795 contains the hugely useful *UnDelete*, a good version of which the Amiga has been crying out for for ages. *UnDelete* quickly and easily restores deleted files - often about as fast as the delete command gets rid of them! Anybody whose hair has turned grey while they waited for *FixDisk* or the far worse *QuarterBack* Tools to scan a disk for deleted files will appreciate this one - along with the earlier *ARestore* (see my February column) it solves all your undeletion problems.

Hack Lite

Disk 799 contains (fanfare!) version Two of *Hack Lite*, an evolved version of the public domain game *Hack*. For those fortunate unaddicted people out there who've never played *Hack*, it's a PD dungeon game short on graphics and sound but long on gameplay, with more depth to it than any commercial role-playing epic - but rather less of an insistence on taking itself seriously. The

current version of *Hack Lite* has passable graphics (as opposed to the coloured text of the rather larger *NetHack*), and - a major improvement - includes an excellent install utility which completely gets rid of all the confusing mucking about with config files and resource installation that *Hack* players have come to know and hate. There's even a configuration editor. For aficionados, quite a few *NetHack* features have been incorporated into *HackLite2* - but it's still simpler to play and more comprehensible than its UNIX-ported cousin.

Saved games are now much smaller - so they save tolerably quickly even onto floppy - and a "Tournament mode" allows several players to compete for the highest score playing in identical dungeons, which is great fun.

PowerData

Disk 801 contains a crippled version of the ShareWare utility *PowerData*, which patches AmigaDOS, enabling all programs to read and write files packed with *PowerPacker* in way that is completely transparent to themselves and the system. It's a sequel to the previous *Powerpacker Patcher* (PP) from the same author, and the addition of the save in crunched mode feature is a big one. This program allows owners of faster machines to greatly increase ap-

parent hard disk space with little or no slowdown, and those of us labouring with older processors can use it too if we don't mind a bit of a wait. ShareWare fee is \$10, and upon paying you get a version which doesn't display annoying requesters and will work for more than 20 minutes at a time. Requires Workbench 2.04+.

FastLife

Disk 802 contains *FastLife*, an excellent implication of the marvellous mathematical toy *Life*. If you've never met this elderly but amazing phenomenon, *Life* uses simple rules applied to a grid, on which any square can be lit or dark depending on the state of its neighbours.

Theoretically, it is possible to produce thinking organisms in *Life* - but on the Amiga scale you'll never do better than subatomic particles. Hundreds of examples are included - come on and get fascinated!

AmigaWorld

Disk 804 has *AmigaWorld*, a database program that contains information about every country on Earth. It enables you to have a look at the data of one country, or to compare several countries. If you need basic statistics on the whole world, this is the program for you.

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HDFixer

Disk 806 contains the latest version (2.00) of *HDFixer*, a program which allows owners of high density floppy drives to use them correctly under KS 37.175 (the standard WB2 KickStart). This program patches the system so that Kickstart V37.175 owners are able to use 1.71 MB HD disks. This completely rewritten version comes as a Commodit and supports the new OS2.x functions, and gives a much easier to use interface than previous versions. Requires Workbench 2.

TimeKeeper

Disk 810 has *TimeKeeper*, a program that restores system time after resets. This is accomplished by storing the current time in a resident structure at regular intervals and restoring it at reboot, allowing for the length of time between boot and time setting. What is this useful for? Well, buyers of Amiga 1200 will have noted that as yet the machine doesn't come with a clock as standard, and this program goes some way to solving the problem without buying more hardware. Requires KS2 or higher.

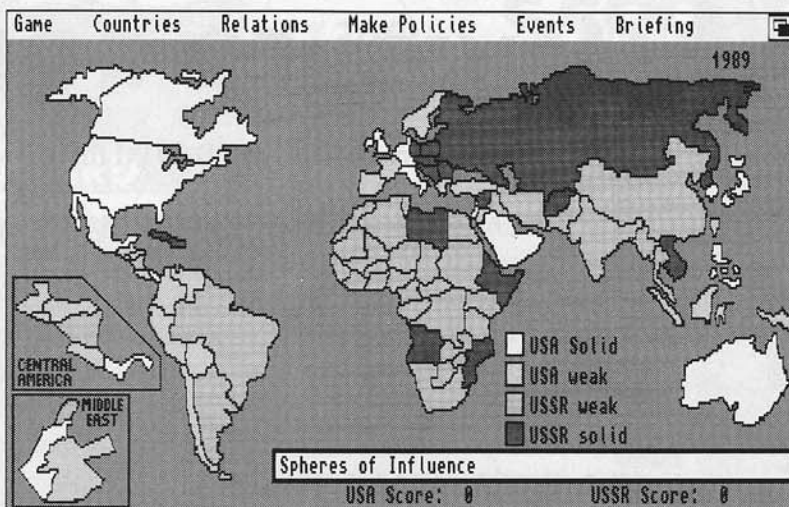
Well, there's the cream of the recent Fish (don't think too hard about that, it'll put you off your dinner).

There's still room for a few other recent releases - I'll catch up further with non-Fish software next month.

Parbench

ParNet is a very cheap two machine networking system which uses a modified parallel cable to connect the machines. It allows data transfer at about 23 kilobytes per second - about the same as floppy - and allows proper networking - you can run programs stored on the other machine, manipulate files there and so on. It works with WB3 machines - I have successfully ParNetted a 1200 to my WB2 500 - but you run into problems when connecting WB2+ to WB1.x.

Many people run CDTV's ParNetted to their main Amiga - but it's got lots of applications, not least bulk file transfers from one hard disk to another without using slow serial cables or even slower floppies.



Balance of Power

The only problem with *ParNet* is that it can be a bit difficult to set up for the novice - which is where *ParBench* comes in. *ParBench* is a fully iconed, comprehensively documented disk which will automatically install *ParNet* on any machine's Workbench floppy or hard disk - or can be used as a boot disk by itself for a quick and dirty *ParNet* setup.

It also includes the ability to actually transfer mouse and keyboard commands direct to the other machine - so you can literally run another machine from yours. The only thing you need beside *ParBench* is the cable itself, which if you're handy with a soldering iron you can make yourself or can be made for you by any friendly tech. If you want one cheaper, write to me care of ACAR and I'll give you a ring and quote a price for the length you want - mine is five metres long and works okay, but I wouldn't go much longer than that.

SysInfo 3.11

SysInfo is Nic Wilson's definitive system information program, which will tell you everything you ever wanted to know about your system's hardware and operating system. The current version is v3.11, which has (yet) another change to the interface look and various small modifications. Any Amiga user interested in how it all ticks should have this program.

Balance Of Power 1990

Balance of Power (BOP to its friends) is a strategy game that puts you in charge of either The Soviet Union or the US circa 1990 - the aim being to outsmart the other guys and get the world over to your way of thinking without turning it into a radioactive wasteland. It's hugely complex and was originally commercial - but has now been released into the public domain! So you can have a giant, commercial grade strategy game for around five bucks - not bad eh!

OOPS

A couple of months ago I mentioned *DMSWin 2.34*, an Intuition interface for the DMS disk compactor. I stuffed up - as did the programmer - this version doesn't seem to work, although I think it does on WB3. Have no fear, v2.30 works fine. Sorry about that!

Companion Disk

There is no companion disk for this column, since the only thing I've mentioned that isn't on its own disk is *SysInfo3.11*, which would be a bit lonely all by itself. It will be on the next companion disk, Hot PD 8, which by the time you read this will be available from Prime Artifex - although the article which specifically relates to it won't come out until next month. Got that? Good. □

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AMOS Column

Wayne Johnson keeps us on the AMOS trail with all the latest news and info also. There's also a section on setting up a dual playfield screen.

Greetings once again from the club. There's a few new things happening at the moment, so I'll get this out of the way first:

News & Updates

- The v1.1 updater is now available from the Australian AMOS Club or from one of the three AMOS BBSs,

Predators: 02 604 6644 - 2400 baud,
02 604 6816 - 9600 baud

Blade BBS: 02 9573050 - 2400 baud,
02 9573380 - 9600 baud

Amiga File Server: 02 8768965 up to 9600 baud

- There is now an AMOS FIDO-NET area on the three BBSs listed above. Here you can catch up on the latest news, info and programs. If you run a BBS and would like to link up with the AMOS FIDO-NET, contact MIG on the Predators BBS.

- The AMOS PRO 3D extension and the AMOS PRO compiler extension are due in at the end of this month. If you already own the original extensions, you can obtain the update for a small fee.

- In mid-May, the AMOS PRO v1.2 updater will be available. This version will be completely different. It will include full support for all AGA screen modes, programming real intuition, and the whole thing will become just a shell for the new AMOS libraries. When compiling, AMOSPro will pull the necessary routines for the program that it needs. No longer will the minimum file size be 50K for a program. Instead, Compiled AMOS programs will become as low as 2K, depending on the program.

- We now have ties with the AMOS Club NTSC in North America. Their PD collection is available from the club (02) 748 4700.

- Another book on AMOS is planned for release in the UK. No details as yet. A games designer book is also planned for Australia.

Dual Playfields

Hands up if you've never heard of it! Dual Playfield is a mode that takes two screens and places one on top of the other. Colour 0 on the top screen is

made transparent so that the screen underneath shows through. You may have heard of Parallax scrolling, well, using a Dual Playfield is the best way of creating it. The process of creating a Dual Playfield screen is to simply prepare two screens between 2 and 8 colours each, and issue the Dual Playfield command.

There are two rules (aren't there always?) involved with creating a Dual Playfield screen. The first rule is that neither screen is allowed to have more than eight colours each. The reason is that the standard ECS Chipset Amigas only display up to six bitplanes for any screen (see chart 1). The newer AGA Amigas are able to display Dual Playfield screens of up to 32 colours on each field. The upcoming 1.2 version of AMOSPro is expected to be able to support this.

Eight colours equals 3 bitplanes, so 2 screens that have 3 bitplanes each total up to the 6 bitplanes maximum allowed.

The second rule is where you position or scroll a screen. If the Y value of a screen drops below 0, the screen pointers reverse to the top of chip memory, causing garbage to display on the screen (see chart 2).

Now we can look at the routine to set up a Dual Playfield screen. As usual, typing the leading numbers and bracket will result in smacked hands:

01)Screen Open 1,320,256,4,Lowres : Cls 0

02)Screen Display 1,,10,,

Chart 1

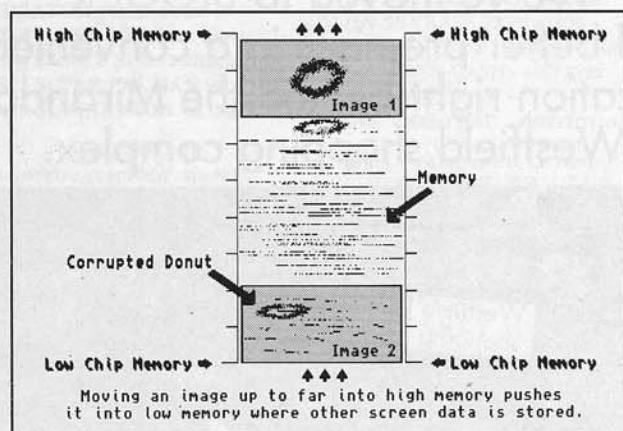
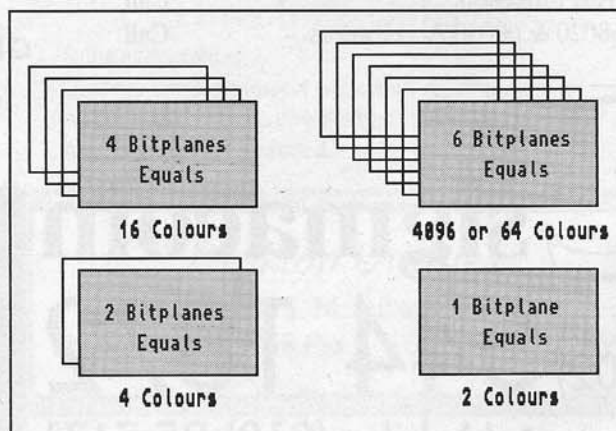
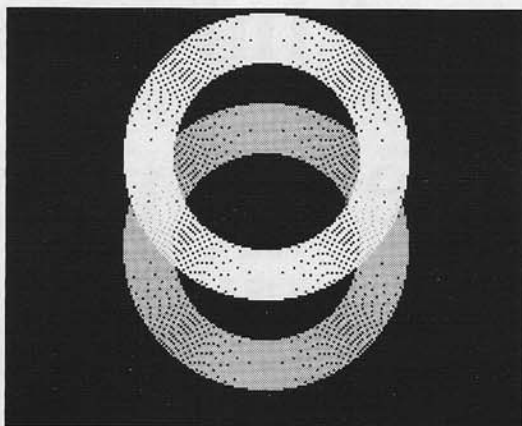


Chart 1





Donut

```

03)Screen Open 0,320,200,4,Lowres : Cls 0
04)Screen Display 0,,10,,
05)Ink 1
06)For R=40 To 60
07) Circle 160,100,R
08)Next
09)Screen 1 : Screen To Front 1
10)Ink 2
11)For R=40 To 60
12) Circle 160,100,R
13)Next
14)Channel 0 To Screen Offset 1
15)Channel 1 To Screen Offset 0
16)A$="Start: Move 0,20,20; Move 0,5,10; "
17)A$=A$+"Move 0,2,4; Move 0,-2,4; Move 0,-5,10;"
18)A$=A$+"Move 0,-20,20; Move 0,-5,10; Move 0,-2,4;"
19)A$=A$+"Move 0,2,4; Move 0,5,10; Jump Start;"
20)Amal 0,A$ : Amal 1,A$
21)Dual Playfield 0,1 : Wait Vbl
22)Dual Priority 1,0 : Screen 0
23)Amal On 0
24)Wait 50
25)Amal On 1
26)Do
27) If Mouse Key=1 : Dual Priority 0,1 : End If
28) If Mouse Key=2 : Dual Priority 1,0 : End If
29)Loop

```

I'll quickly go through the above: (1) to (4) opens the two screens that are to be married on top of each other. (5) to (13) uses the circle command to make two large donuts and make each on a different colour by using the Ink command. (14) and (15) tell the AMAL system that we want to use channel 0 and 1 to control each screen (or playfield).

(16) to (19) is the Amal string that defines the movement path of both donuts. (20) tells Amal channels 0 and 1 to get their instructions from A\$. (21) to (22) puts the two donuts on top of each other by calling the DUAL PLAYFIELD command and putting in the two screen numbers. Afterwards, the program defines which donut will go on top.

(23) starts the first donut moving. (24) waits 50 counts before going on; otherwise if jumped straight to (25) without (24), both donuts would move together and you would see no real effect.

(26) to (29) check for either mouse button. If the left one is clicked, screen/playfield/donut 0 goes to the front, and if the right one is clicked then the second goes to the front.

Next Month

That's about all there is to it. Before I finish up, next month we are going to have an interview with Francois Lionet, the creator of the AMOS series.

But this will be an interview with a difference - you ask the questions! What you have to do is to either ring me on (02) 748 4700 between 2pm and 4pm daily, or write to: PO Box 253, Rydalmere, NSW, 2116 and write down your question to Francois.

There is only one condition - your question cannot be a programming question or problem. Please send general-type questions only. If in doubt, send it anyway. Look for this next month! ☐

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You Can CanDo

Greg Abernethy explains how to write your own pattern matching game using CanDo.

Following on from last month, we will be designing another educational game, where the computer displays a random pattern in nine squares. The length of the pattern begins as three squares. The user must then click on the squares in the same order as the computer. If correct a message is displayed and the pattern sequence is increased by one. If the user is incorrect the pattern is reset to three squares. This game is useful for developing hand-eye co-ordination and improving memory skills.

Getting Started

The application will consist of a medium resolution (640 x 256) screen, that has nine squares drawn onscreen, a blank button over the squares, a field displaying prompt messages, a field displaying the current pattern size and three buttons with program options.

CARD SPECIFICATIONS

CARD NAME "Game2"

AFTERSTARTUP SCRIPT

SetRGB 0,0,0,0

SetRGB 1,255,255,255

SetRGB 2,110,110,110

SetRGB 3,255,255,60

PrintText CenterString("***** FOLLOW THE PATTERN *****",80),0,10

Let x = 1 Let y = 40

Loop

DrawBorder 60,y,100,50,BEVEL,1,2

Let Pos[x].x = 110

Let Pos[x].y = y + 20

DrawBorder 160,y,100,50,BEVEL,1,2

Let Pos[x + 1].x = 210

Let Pos[x + 1].y = y + 20

DrawBorder 260,y,100,50,BEVEL,1,2

Let Pos[x + 2].x = 310

Let Pos[x + 2].y = y + 20

Let x = x + 3

Let y = y + 50

Until y > 180

Do "Reset"

Explanation: When the deck loads, I set the first four colours of the palette to BLACK, WHITE, GREY and YELLOW. A title for the game is printed at the top of the screen. The nine squares are then drawn on the screen using a loop that increments the x and y values as each square is drawn. The Pos.x and Pos.y variables contain the x and y coordinates for floodfilling each square when the pattern is being displayed. The routine "Reset" is then performed.

Routine

DetachObject "Pad"

Let Length = 3

Dispose Pattern

Let x = 0

Loop

Let x = x + 1

Let Pattern[x] = Random(1,9)

Until x = Length

SetText "Message", "Click on READY to START Pattern"

SetText "Length", "Current PATTERN

Length: "|||Length

Explanation: This is the only routine in the game. Firstly, the button covering the squares is detached to avoid any problems if the user clicks on the squares while the pattern is being dis-

played. The variable Length is set to three. The variable Pattern is cleared and then a loop is performed that places a random number between one and nine into each array entry of the Pattern variable. At the start of the game the Pattern variable has three entries. If you want to change the starting length for the pattern to make it harder or easier, change the Length variable. The "Message" field has a prompt message displayed and the "Length" field has information on the current length of the pattern displayed in it.

The specifications for the window;

WINDOW NAME No Name for Window

WINDOW SPECIFICATIONS

X POSITION = 0 : Y POSITION = 0

WIDTH = 640 : HEIGHT = 256

NUMBER OF COLOURS = 4

NO WINDOW GADGETS

WINDOW OPTIONS

THE WINDOW'S BOARDERS ARE INVISIBLE
TRY TO OPEN WINDOW ON THE CURRENT SCREEN

MESSAGE FIELD SPECIFICATIONS

Field Name = "Message"

Horizontal = 63 Vertical = 28

Width = 294

Border = DOUBLEBEVEL

FieldType = "Text"

Centre Justification

NO Script.

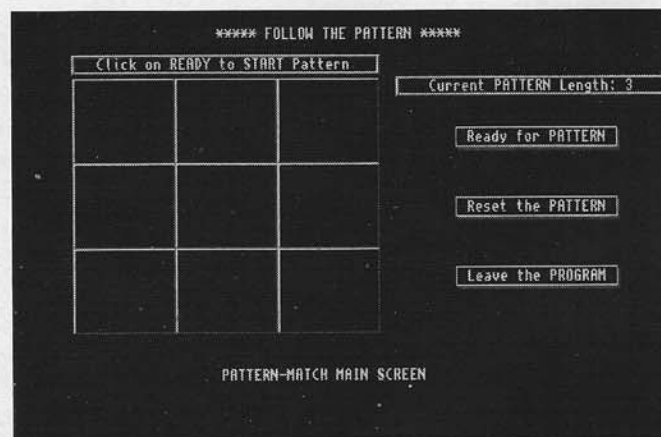
LENGTH FIELD SPECIFICATIONS

Field Name = "Length"

Horizontal = 380 Vertical = 41

Width = 256

Border = DOUBLEBEVEL



FieldType = "Text"
Centre Justification
NO Script

READY FOR PATTERN BUTTON SPECIFICATIONS

Button Name = "Ready"
Horizontal = 435 Vertical = 70
Border = SHADOW (WHITE/GREY)
Button Type = "Text"
Text = "Ready for Pattern"
RELEASE Script

Pointer OFF

Let x = 0

Loop

Let x = x + 1

SetPen 3

FloodFill Pos[Pattern[x]].x, Pos[Pattern[x]].y

Delay 0,1,0

SetPen 0

FloodFill Pos[Pattern[x]].x, Pos[Pattern[x]].y

Until x = Length

Pointer ON

SetText "Message", "Follow the PATTERN now!!!"

ReattachObject "Pad"

Let cnt = 0

Explanation: This script draws the random pattern on the screen. The pointer is switched off and a loop is performed that fills each square of the pattern in turn.

The current colour is set to YELLOW and the first square of the pattern is filled in. There is a one second delay and then the current pen is set to BLACK and the square is filled again.

The time delay can be altered if you want to make the pattern quicker or slower by changing the length of the delay. This continues until all the squares in the pattern have been displayed. The pointer is switched back on and a prompt message appears in the "Message" field. The button covering the squares is reattached and the cnt variable is set to zero. The cnt variable is used to keep track of the number of squares selected by the user when following the pattern.

RESET THE PATTERN BUTTON SPECIFICATIONS

Button Name = "Reset"
Horizontal = 435 Vertical = 111
Border = SHADOW (WHITE/GREY)
Button Type = "Text"
Text = "Reset the Pattern"
RELEASE Script
Do "Reset"

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Explanation: The user has selected to reset the pattern so we simply do the "Reset" routine and return everything to the beginning.

LEAVE THE PROGRAM BUTTON SPECIFICATIONS

Button Name = "Quit"
Horizontal = 435 Vertical = 152
Border = SHADOW (WHITE/GREY)
Button Type = "Text"
Text = "Leave the Program"
RELEASE Script
Quit; Exit to Workbench

PAD BUTTON SPECIFICATIONS

Button Name = "Pad"
Horizontal = 60 Vertical = 40
Width = 300 Height = 151
Border = NONE NO HIGHLIGHT
Button Type = "Area"
RELEASE Script

```
SetPen 3
FloodFill mouseX, mouseY
SetPen 0
FloodFill mouseX, mouseY
Let xpos = mouseX - 60
Let ypos = mouseY - 40
Let xpos = xpos % 100
Let ypos = ypos % 50
Let y = ypos * 2
Let ypos = ypos + y
Let num = xpos + ypos + 1
Let cnt = cnt + 1
If Pattern[cnt] <> Num
    SetText "Message", "BAD LUCK!! That is
    INCORRECT!"
    Delay 0,2,0
    Do "Reset"
EndIf
If Length = cnt
    SetText "Message", "WELL DONE. You got
    the PATTERN"
    Let Length = Length + 1
    Let Pattern[Length] = Random(1,9)
    Delay 0,2,0
    SetText "Message", "Click on READY to
    START Pattern"
    SetText "Length", "Current PATTERN
    Length:" || Length
EndIf
```

Explanation: I've used one button to cover the nine squares rather than have a button for each square. When the user clicks on a square, the square is filled in YELLOW and then filled in



BLACK. I then find which square they have clicked on, and do a check to see if the number matches the number in the pattern sequence. If the numbers do not match, a message is displayed informing the user that they have not followed the pattern correctly. In this game I have reset the pattern at this point.

An alternative would be not to reset the pattern and allow the user to attempt the pattern again at the current length. If the correct square is clicked on and the cnt variable matches the current pattern length, a message is displayed informing the user that they have followed the pattern correctly. The Length variable is increased by one and the Pattern variable is also increased by one with a new random number. If the square they have clicked on is correct but the cnt variable is less than the length of the pattern the cnt variable is incremented by one and the script is exited.

The game can be enhanced by the use of colourful graphics, sound effects and perhaps speech. Altering the delay when showing the pattern can also improve the game.

Field Naming Hint

Have you ever had the situation where you have designed a program that requires the use of a large number of fields and you need to move the cursor from field to field when the user enter text and presses RETURN. A little trick I use is to number the fields in sequential order. For example, I had an application that used twelve fields. I

named the fields from "1" to "12" and placed the following script in the "Return" script of each field.

Do "NextField"

I then created the "NextField" routine and used the following script;

```
If Integer(ObjectName) < 12
    SetObjectState ObjectName + 1, ON
Else
    SetObjectState "1", ON
EndIf
```

Using the ObjectName variable, which returns the name of the currently selected object, being the field with the cursor highlighted in it, I convert the name to an integer and then check to see if it is less than the number of fields. If it is less than the number of fields I set the ObjectState of the next field on otherwise I set the ObjectState of the first field on. I find this saves lots of time and program size. Also, I use the SuperDuper utility in CanDo V2.0 which creates multiple fields or buttons from one button. This utility is one of the best features of CanDo V2.0.

Next Month

In our next CanDo column, we will begin work on a Directory Utility. It may not be up to the standard of Directory Opus but it will have some useful features such as IFF display and Icon display and will demonstrate many of CanDo's features. □

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The C64 Column

by Owen James

Public Domain Update

The world of C64 public domain software continues to grow, so this month sees us looking at some of the latest offerings from Brunswick Publications. Information on how to obtain these disks is printed at the end.

Disks 140 & 141 - Pedigree V3.0

One area of computing that has generated a surprising amount of interest is Genealogy, or tracing the 'Family Tree'. The ability to analyse database information and produce reports based on the results has meant that computers are ideally suited to assist with the task of compiling a family tree. The C64 has proven to be just as capable in this area as many of the larger systems.

Pedigree is a high-quality Shareware alternative to the many commercial programs which perform basically the same function. The program is very large, filling two complete disk sides and includes a full tutorial. Information screens are available on almost every function, making it very easy to use.

It consists of a series of integrated modules which together form a complete system to help simplify the task of collecting, organizing and printing personal genealogical data. All modules offer the same easy to use interface. Information is firstly entered into the database mod-

ule, where it is analysed by another module before being formatted and printed. Naturally, data can be saved and recalled at a later date. The data can also be exported as plain sequential files which may be loaded for further editing in almost any word processor.

Pedigree is an excellent program by any standards, and the fact that it's Shareware makes it just that much more attractive. If you're compiling your family tree then this program is worth a look.

Disk 157 - Lotto Game

It seems easy. Just correctly pick the six numbered balls which you think will spout out of the Lotto machine and you'll be an instant millionaire. Though the chances of winning are very slim, each week thousands of Australians find it too tempting to resist playing. So it's no wonder why there are so many computer programs designed to supposedly help increase your chances of taking out 'The Big One'. Some calculate a winning combination by analysing the frequency of past numbers, while others work on producing a system which will guarantee an investor a win of some kind.

Disk 157 provides three distinctly different Lotto 'utilities'. The first, *Lotto Game*, is unique in that it doesn't try to give you a winning combination of numbers. Instead, its main purpose is as a *Lotto Simulator*. You must first select

six numbers, and then *Lotto Game* will simulate draws and compare your chosen numbers against the winning combination. It will report the number of correct selections, and can continue to draw automatically, keeping a running total of each simulated game to give you the overall success of your chosen numbers. Using *Lotto Game*, it's very easy to see just how slim the chances of winning any major prize really are.

Lotto Companion is the second utility and is perhaps the more useful of the three. You need to enter in the results of past Lotto draws (the more you enter, the more accurate the sample), and then *Lotto Companion* will produce reports detailing the most frequent numbers. There's no guarantee that the more common numbers are more likely to pop up in next week's draw, but it may just be worth a try. Just remember that the program has been classed as "Fairware" - if you win, Peter Boothman would like a percentage of winnings!

Finally, there's *Lotto Picker*. It doesn't try to add kind of scientific formulas to the numbers it selects, instead it follows the more likely idea that any one ball has as much chance of popping up as the next. The random selections are all nicely presented, but I don't think it gives any more chance of winning than my own winning formula: Take your tax file number, divide it by two, multiply the first two digits by the square root of ...

More C64 PD software next month. As usual, a big thank you to Brunswick Publications for providing this month's disks for review. If you're interested in obtaining the above disks, or finding out about their many other C64/128 titles, write to: Brunswick Publications, PO Box 458, Bondi Junction NSW 2022.

Letters

Sourcing GEOS Software

S. Mackenzie of Cooma NSW writes: "Dear Owen, In a minute I'll congratu-

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OJ: I don't know of anywhere near Canberra that carries GEOS software. You might be best contacting a mail order company such as Logico here in New South Wales. Call them on (02) 550 0727 or fax (02) 558 1884. A *Final Cartridge III* manual might be a little more tricky. Pactronics were the Australian distributors, so you might try contacting them on (02) 748 4700 and asking if they can get one for you. For Bulletin Board information, you'd be best getting hold of a recent BBS listing. Bulletin Boards close and new ones appear so regularly that any numbers I give you might be out of date by the time you read this. BBS listings are available from most Bulletin Boards. In Canberra try the Caught in the ACT BBS on (06) 292-8288 or in NSW try the Australian BBS Registry on (047) 35-6789.

Advice

'Megabyte of MCG' (whatever happened to originality in handles?) writes: "Dear OJ, I've been reading ACAR for about four years now. I still find some articles very interesting. I'm writing to you to give some advice to people. Firstly to Mrs S. Symonds, try dropping boulders into a wall with air under it. It's a Magic Milling Wall. Kevin Power and Travis Howell, please write to me for help. Megabyte of MCG, PO Box 1203, Mt G SA 5290."

OJ: Sounds like it belonged more in the Entertainment end of the magazine, but thanks anyway.

Sick of Amiga!

A reader that signs as Nicholas 'An-

gry' Bronson writes: "Dear Owen, I demand that you get at least one more page for the C64 Column. If you don't get it I will get on the next plane and murder the person responsible because I am sick and tired of the Amiga, after all it IS a Commodore AND Amiga magazine. Also Owen, do you know where I can get good quality Adventure games for less than \$100?"

OJ: Oh great. My own private band of Vigilantes. I somehow don't think that will make much of a difference, but thanks all the same. As for affordable good quality adventure games, you could try some of the public domain titles. Brunswick Publications has at least three disks that I know of with adventure games. Each of their disks are \$5, and the adventure disks have between three and six adventures each. For more information contact Brunswick Publications, PO Box 458, Bondi Junction NSW 2022.

Diagnostics

Ken Woodward of New Lambton writes: "Dear Owen, Hi! Great column you have in the ACAR magazine. Since you are our local C64 Guru I was wondering if you could help me with a small problem.

"I am trying to locate a cartridge that performs diagnostic testing on the whole C64 system. It was originally imported or manufactured by a firm called HPD in South Australia. Their telephone number in some old ACAR magazines is now disconnected.

"Could you, or any readers, put me in touch with HPD or a company who may be able to help?"

OJ: The numbers I have for HPD are (08) 349 8486 for voice and (08) 349 4667 for fax. As far as I am aware they no longer carry C64 products, but they may be able to put you in contact with their overseas supplier. If any reader has some more information about the cartridge we'd love to hear from you.

GEOS Programmers Reference Guide


Stuart Buck of Jerilderie NSW writes: "Dear Owen, I was wondering if you could help me. Recently I bought *geoProgrammer*, the assembly language environment for use with GEOS. Upon reading the user's manual supplied with the program, I found that writing your own applications for GEOS, or anything that uses the GEOS Kernal's routines, is virtually impossible without another book that is mentioned in the user's manual. The book in question is *The Official GEOS Programmer's Reference Guide*.

"I was hoping that you could give me the address, or phone number of a supplier/retailer here in Australia, that I could get the book from. I was also wondering if you could tell me of a retailer that might be able to sell me an REU or geoRAM."

OJ: *The Official GEOS Programmer's Reference Guide* is distributed in Australia by Computermate. If you give them a call on (02) 457 8118 or fax on (02) 457 8739 they may be able to put you in touch with a local dealer. Computermate should also be able to help you out with a dealer for geoRAM.

For SALE

Before we go this month, a few items from the 'For Sale' department: Telecom Viatel unit - brand new \$25, Label printer program \$5, Music Composer cartridge \$10, OCP Art Studio \$25, Song Writer \$20, The Big One (Lotto) \$8, Cheque Book Accounting \$12, plus around thirty Datasette games. If anyone is interested, fax or telephone (047) 57 3982. Credit Card payment welcome.

That just about wraps up the April edition of The C64 Column. As always, I'd love to hear from you. Send any questions, comments, or suggestions to The C64 Column, PO Box 288, Gladesville NSW 2111. 

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Tutorial

Deluxe Paint's Hi-Res

Graham Bowden explains how to combine delicate detail with spectral splendour.

Okay, Amiga artists, hands up those who run to *Deluxe Paint 4's* HAM mode when creating multi-shaded masterpieces. Have you found your machine has slowed down considerably? Are the pixels a little too large to allow fine detail work? Got a problem getting the palette just right to prevent too many odd shades appearing between adjacent horizontal colours due to HAM ramping? What's the answer?

Not Lo-Res, that's for sure. This resolution speeds up the action, but it also vastly restricts the number of colours available while retaining the bulky pixels. Interlace gives no more colours yet bounces the eyeballs with its rectangular pixels and Med-Res reduces the colours still further with again, odd shaped pixels. Then there's Hi-Res.

Yes, it can pound the pupils just as easily as Interlace mode can because let's face it, it is interlaced. This flicker flounce can be reduced to some extent, however, by trying to keep highly contrasting colours apart. But look, I'm more than happy to wear the flicker because of the advantages afforded by the small pixel size in Hi-Res mode.

The Advantages of Hi-Res

The speed, although slower than Lo-Res, far exceeds HAM's geologic rate of operation and fine detail is also abundantly available because of those petite pixels. What about the limit of 16 colours, I hear you say. What limit? Those small dots have a way of releasing the

artist from the narrow Hi-Res spectrum you know.

An explanation will follow but first a question. How many Hi-Res Hues can a *DPaint* guru use? More than 16 obviously or there would be no need for this article, but how many are possible? Are there perhaps 32 or 120? Will anyone dare to speculate on as many as 240? Why not go really wild and say maybe 550? In fact if my mathematics are correct I'll go absolutely ape and say 894 different shades.

Yes, gentle readers, you read that right, it really is feasible to simulate 894 colours. Sure, it's not 4096 but it's not bad though, is it? Now my maths may not be up to speed and there may be more or perhaps fewer but once I've explained how it's done you can check the answer and correct me via a letter to the editor if I err.

I must point out though that there's still no such thing as a free lunch. With so many shades some will be hard to distinguish as separate colours and many will appear quite grainy and far from flicker free. Sorry but that's the price we pay for the Amiga's system of operation unless our budgets stretch to flicker fixers, multi-sync monitors or the new AGA machines. If it's any consolation my budget doesn't either.

Down To Business

But I digress. Look at Figure 1a and you'll see an example of Hi-Res pseudocolours. There are only seven base colours along the top row of colour

patches yet they've been mixed to create another twenty-one shades giving a total of twenty-eight. The theory of operation is simply a coarser version of that used to produce all the colours on the monitor screen.

Run a magnifying glass over your monitor or TV screen and you'll see the hues are achieved by varying the brightness of three basic colours. The colours of course are red, green and blue and their brightness is controlled by varying the output of each colour's electron gun.

With *Deluxe Paint* this is done by calling up the palette requester and moving the Red, Green or Blue sliders up or down to vary the output of the respective guns. The screen's dots of colour are so minute that it takes a magnifying glass to see them individually whereas the single Hi-Res pixel can be easily viewed with the naked eye. The naked eye cannot however, discern the tiny individual pixels on a Hi-Res screen when mixed as shown in Figure 1b (page 61).

The four patches highlighted in Figure 1a (page 61) are here magnified to better illustrate the checkerboard pattern which closely mixes two colours to trick the eye into seeing a third. Up to 120 colours can be created with this method. That's 16 base colours and 104 mixed colours. Work it out for yourself, each column adds the same number of colours as the column number. That's $1 + 2 + 3 + 4 + 5$ and so on up to 16. Coarser than the monitor screen it may be, but effective it most definitely is.

Are the extra colours worth the trouble of painstakingly clicking down all those individual pixels though? They sure are!

A Faster Way

Look, occasionally you will have to lay the dots down by hand but there are a couple of much quicker ways to do the job for most applications. Both involve the use of the fill requester but one additionally requires the use of a stencil.

Turn again to Figure 1a and note the green and red checked square in the lower left corner. Imagine this as a four pixel brush. The brush can use any two colours from the palette but they must be arranged as shown. Different pairs of

Australian Commodore & Amiga back issues still available

(We also have previous issues)

JAN 1992 Vol 9 No 1

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colours obviously produce different shades. When picking the brush up be absolutely sure to grab only those four pixels. Picking up more than those four will upset the pattern in the next step which involves selecting the fill requester.

This can be done with a right mouse click on either the Fill tool, the Draw tool or in the lower right half of any of the Filled Shape tools (rectangle, circle, ellipse or wonkey). Mind you, I personally prefer the keyboard shortcut of pressing <shift> F. In the requester click "From Brush" and, provided only the four pixels needed for the pattern were picked up as a brush, there will appear to be a smooth colour in the pattern window.

A series of horizontal and vertical lines in the window mean more than the four pixels required for the pattern were picked up with the brush. Exit the requestor and try picking it up again. Once the pattern's right click OK to lock it and draw some filled shapes on the screen. Because "Pattern" has been chosen as the current fill type, not only will all filled shapes be flooded with the simulated colour but anything coloured with the Fill tool will be also.

But there's more. The next quick and easy means of colour simulation calls for a two pixel brush shaped like the black one shown in Figure 1a. When picked up as the current brush and used as the "From Brush" fill type a new manner of colour mixing is available. Using filled freehand (Click in the lower right of the Draw tool or <shift> D on the keyboard) a shape can be drawn on the screen which will fill with the checker board brush pattern.

Create a stencil which protects only the brush colour. Once created, turn the stencil off, clear the screen then turn the stencil back on. Remember, *Deluxe Paint*'s stencil function will not forget which area of the screen was protected even though the colour itself has been cleared.

Go to Figure 2c (page 61) and I'll explain how this second simulation works. With the stencil on I grabbed the largest built in brush, hit the "+" key a couple of times to make it still larger and drew a few different colours across

the protected area. I then went to the "Effects" menu and under the "Stencil" menu selected "Reverse". As the selection implies it has the effect of reversing the stencil, protecting those areas which were previously free and allowing me to draw on the formerly protected areas. Now when I dragged the mouse over what I'd already drawn I achieved some new shades as shown in the illustration. Simple isn't it?

Using Stencils Wisely

A word to the wise regarding reversing stencils. Resist the temptation to reverse the stencil from within the Stencil Requester. Whenever a stencil needs to be inverted use the Stencil>Reverse menu item under the Effects menu. This item allows the stencil to remember which areas of the screen were protected when the original stencil was created regardless of what colours have been laid down over those areas in the meantime. The checkerboard pattern will remain active as you swap from one "half" to the other.

On the other hand, if the Stencil Requester "reverse" function is used nothing will actually be reversed until the "OK" button is clicked to exit. But this creates a new stencil. Any colours stamped over the original stencil colours are not included in this new one. The pattern will be lost. Now don't worry if you can't quite follow this paragraph, just remember to only use the Effects Stencil>Reverse menu item when reversing a stencil while drawing. Enough of that, there's more to come.

Figure 2a and 2b show the manner employed to gain even more shades. The original 16 colours grew to 120 in the manner already explained and can be boosted by a further 240 when mixed as shown in colour patch 2 in figure 2b. This mixes three parts of one colour with one part of another rather than half and half as previously done. But there's even more.

We can up the ante still further, by an incredible 550, if the pixels are mixed as in patches 3 and 4. That's $120+240+550 = 894$. Can we mix 4 colours together?

Sure we can but the maths of permutations and combinations to calculate the

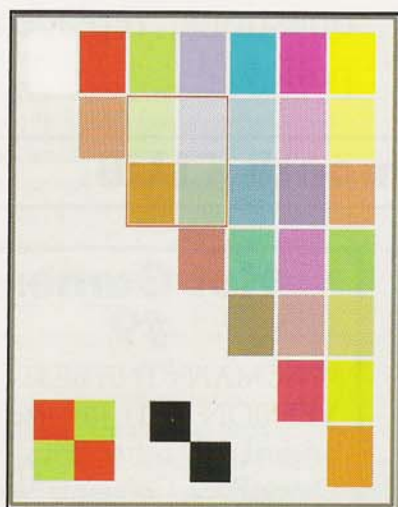


Figure 1a

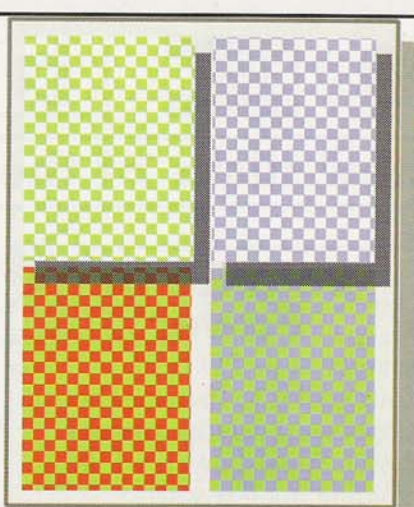


Figure 1b

number of shades defeats me. Mind you, when you try this out for yourself you'll find numerous combinations are impractical due to too much contrast between the pixels causing unacceptable flicker. As I said earlier the differences between many of the colours are so subtle that they appear to the eye to be identical. At least to my jaundiced eye they do.

And Even More Scope

Incredibly there's still more. Would you like extra-halfbright? YEAH!! But how do we simulate those halfbright shades which are available in Lo-Res mode and are so handy when creating shadows? Look again at Figure 1b. The drop shadows from the two upper patches cause them to appear to be floating over the lower pair. How do you get it? That

black two pixel brush pattern from Figure 1a of course. When a filled shape, in Figure 1b a rectangle, is drawn over an area of the screen, any colours already present appear darker as half the screen pixels are covered by the black constituent of the fill pattern while the other half show through the transparent part of the pattern.

After the rectangles were drawn I picked the small green/white and blue/white patches up from Figure 1a, enlarged them using the keyboard command <shift>-H, and stamped them down over the black checkerboard rectangles. Simple but effective extra half-bright.

Okay, get in there and create.

Next month we'll see a couple of practical examples using these pseudocolour mixing methods so until then ... Ciao.

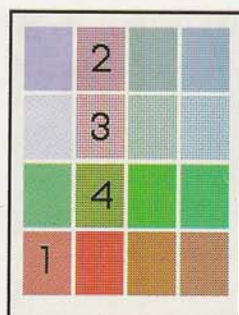


Figure 2a

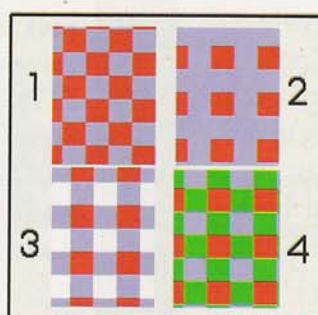


Figure 2b

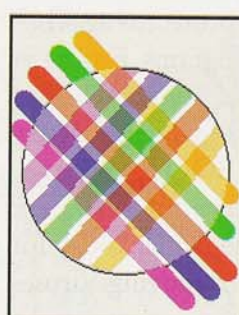
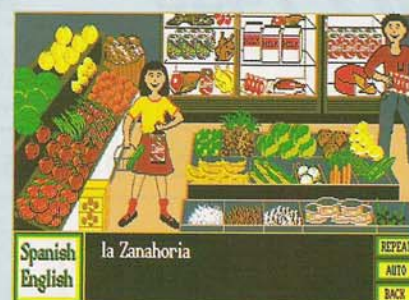


Figure 2c

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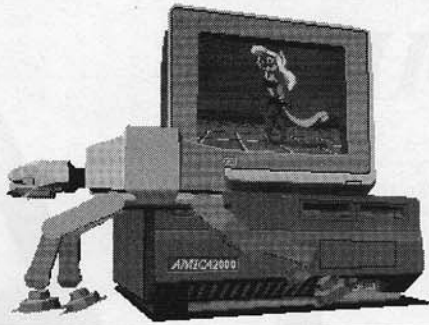
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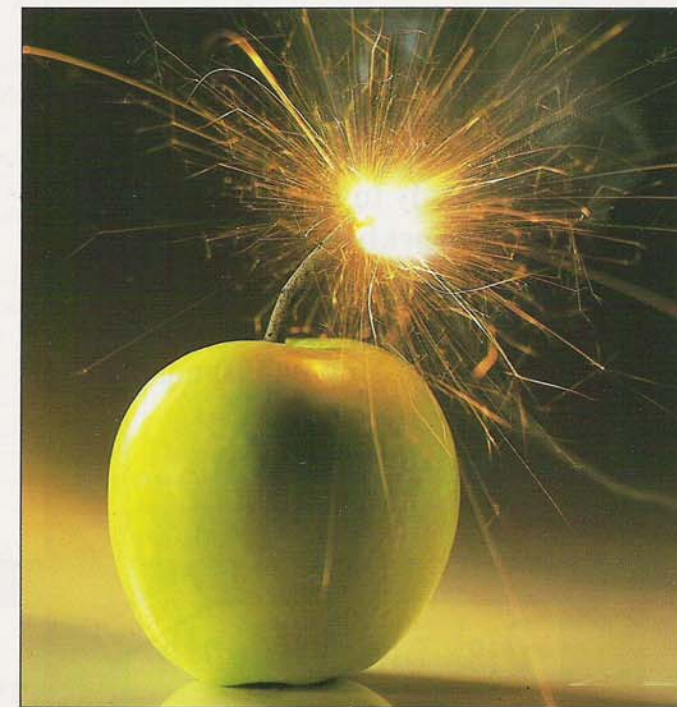
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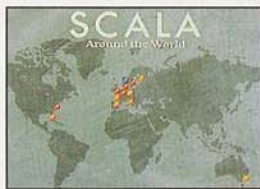
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For Beginners Andy's Attic

Moving Up to Workbench 2.0

Out with the old and in with the new, let's have a look at WB2.0. Andrew Leniart examines what's new and what's not under the facade of the new sleeker operating system for the Amiga.

Have you upgraded your Workbench software yet? Still using WB 1.3? You're doing yourself an injustice. Over the next few issues, Andy's Attic will be exploring the basics of the Amiga's new operating system and trying to convince the unconverted that an upgrade is a very worthy and time saving investment. Those that have just made the leap to the new operating system should find some useful tips along the way.

The Upgrade

Your purchase of WB2.0 will include a new system ROM, which simply slots into the existing socket that holds your 1.2 or 1.3 ROM. Four floppy disks are supplied - Workbench, Extras, Fonts and an Installation disk. Installing the software on your hard drive is an absolute breeze with the installation script supplied.

Pleasing to the eye is the comprehensive manual included with the upgrade. Commodore have listened to all the criticism that they received over previous efforts and have supplied with the 2.0 release of WorkBench, a comprehensive and well laid out user manual. Early buyers will have been fortunate enough to obtain the ring bound ver-

sion which sits flat on your table and is quite easy to use and follow. More recent releases are perfect bound.

New Features

Many people have a habit of not reading instruction manuals and I am no exception. However, spending the time to do so will reveal many things not immediately apparent in many software packages. This is especially true with WB2.0. Here's something to try. Reboot your Amiga while holding down both mouse buttons. Doing so will present you with a nifty feature of the new operating system - the boot menu.

From this menu, you can override the Amiga's natural boot sequence from your hard drive or from a disk in DF0:. You can tell it that you would prefer to boot first from DF1: or even DF2: if you have two external drives. A real bonus if your internal drive ever bit the dust and decided it didn't want to play any more.

By using the advanced options, you can even disable the startup-sequence if your heart desires. This can be a very handy feature for those times when you only want to quickly switch the Amiga on and access a CLI, not having to wait until the startup-sequence completes.

I've personally found this useful when trying to run a demo from an external drive that wants every little bit of my total three megabytes of RAM.

New/Altered Pull Down Menus

There are also many other useful little changes once on the workbench screen. Check out the pull down menus. A neat addition on the first pull down menu is Backdrop. Selecting this item will make your WorkBench screen into a borderless backdrop, just as it was in WB1.x. Otherwise it's a normal window, which can be shrunk and manipulated just like any other.

Execute Command gives you the means to run any CLI program without the need to first open up a Cli or Shell. As long as the program is in your defined path on startup, then the Amiga will find and run it for you. Of course, you can also specify a program somewhere else with a standard pathname.

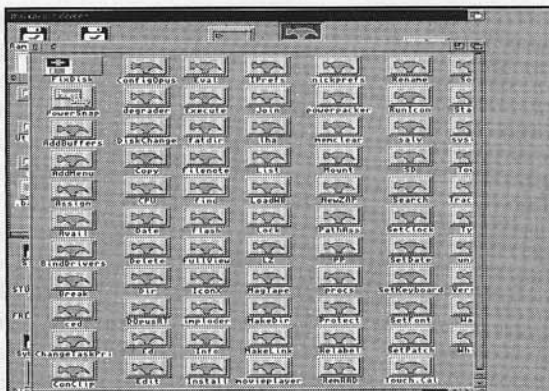
Update All is handy when working on both the Workbench and in a shell or directory utility. If you have been deleting files from the visible windows on workbench via a shell or directory utility, then selecting this item will redraw all open windows' contents to reflect their true contents. Saves the need to close and re-open windows to have them redrawn all the time.

Moving along to the Windows pull down menu, we find New Drawer. This serves the same purpose as the old Empty drawer icon we used to have to duplicate and rename every time we wanted to create a new directory on Workbench in versions 1.2 & 1.3. A big time saver, as it's now as easy as pressing Right Amiga-N to create a new drawer whenever you need one.

Select Contents is yet another potential time saver. It allows you to select every icon in any active window. Partially extended icon selection is also brilliantly catered for in the new operating system. Remember the trick to extended selection in WB1.3? Click once on an icon, hold down shift key and click on the others. That trick still works, but try this for size.

Hold down your left mouse button near the top left corner of the first icon you want to select. Make sure your pointer does not touch the icon. Keeping your finger on the left mouse button, drag the mouse down and right and you will notice a dotted box appear and progressively get larger. Keep making the box larger until all of the icons you want selected are within it and let the mouse button go. Bingo, how easy was that?

Prefer to run a program from Workbench that does not have an icon? WB2.0 makes it possible. Open the drawer where the program lives and use the Show > All Files option. A bit of disk access and your window will contain icons representing every program within the drawer. You can now double click the icon of your choice and you will get a requester asking for any rel-



All Files

evant arguments (options) which may need to be passed to the program. Enter them here and click on OK.

View By gives us the means to view and work with files on the Workbench by using a combination of WB and CLI methods. I.e: Select "View By Name" and your windows will contain listings of the files in letter form just like you would see them in a Shell or Cli, with

all the advantages of having the extra info about files when viewing in a shell.

The difference here is that you can now work with these files via your mouse. Clicking on a directory will open up another window with its contents and so on. Programs can be run by clicking on their names just as easily as clicking on icons. A boon to people who prefer Cli type listings, but don't like to do a lot of keyboard hammering - the reason why many use directory utilities.

The ICONS pull down menus are pretty standard, however a couple of nifty items here are the LEAVE OUT and PUT AWAY ones. Using "Leave Out" will move an icon from its window and onto the Workbench screen so that it is always readily accessible without opening its drawer. Put Away does as its name suggests and puts the icon back into the drawer it came from when

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you no longer want it available from the workbench screen.

The TOOLS item in WB2.0 gives us added flexibility by allowing us to include other programs which can be launched directly via this menu. We'll take a look at a couple of applications that take advantage of this neat new feature in future issues.

Most will agree that there are quite a few improvements there alone. All those great features and we haven't even opened the Workbench disk yet and explored ITS new and useful contents!



By Name

Negative Points

I've personally been using and exploring WB2.05 for a few months now and I must say that I haven't really found a great deal about it that I am not impressed with. There are very few negative points to report. Mainly incompat-

ibility problems with some of the commercial software that I've purchased, however this is due to poor programming on the software authors' part, rather than a problem with WB2.0

The best way around software incompatibility problems is to simply purchase and install a ROM switch. There

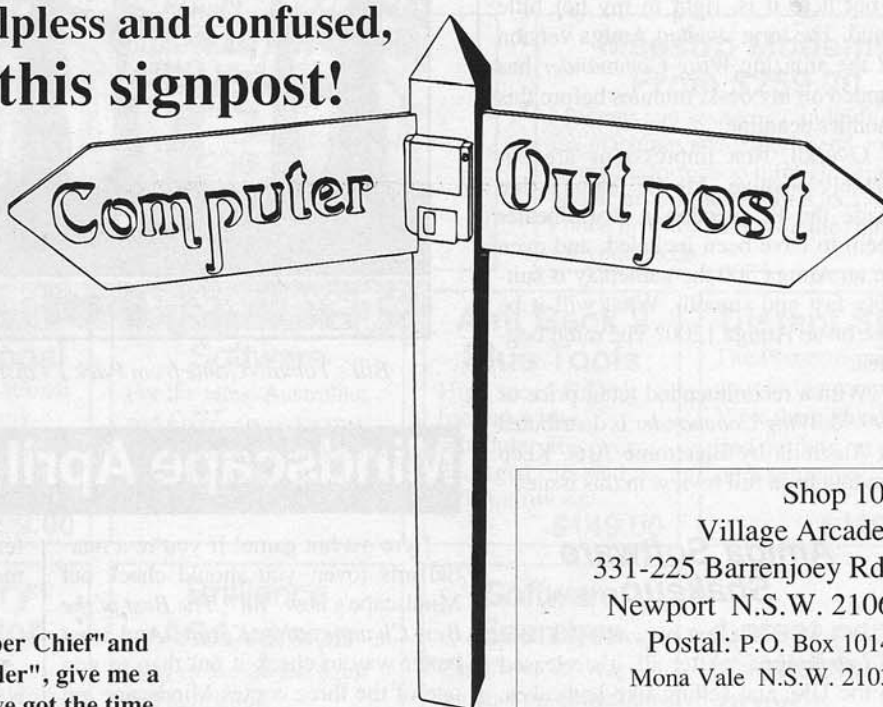
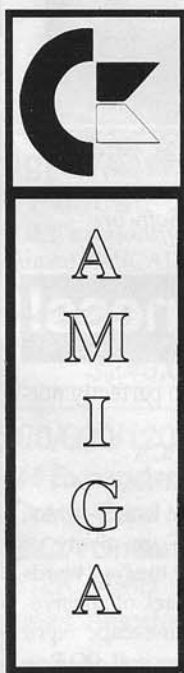
are a few types available and they give you the means to have both your 1.3 and 2.0 ROMs installed in your machine. I purchased mine from Megadisc mail order, and it allows me to select my 1.3 ROM via the press of a mouse button. It works great, however there are cheaper "toggle switch" ones which you can get that will do the job just fine. Check the advertisements in this (and previous) issues for locations and prices.

Concluding

That's about all we have space for in this month's column. The next issue of Andy's Attic will take a look at some of the new WB2.0 C: commands along with some tools and commodities which are useful time savers for the average Amiga user.

See you then ...

If you feel lost, helpless and confused,
Just follow this signpost!



Howdy to "Super Chief" and "Glorious Leader", give me a call when you've got the time.

G'Day to Dot and Ian Bishop.

G'Day to Bruce Greig, glad to hear the A3000's going great!!

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Phil Campbell's Amiga Entertainment

*All the latest news and views from the world of
entertainment*

Amiga Wing Commander Hot Off the Truck

The sceptics said it couldn't be done - but here it is, right in my hot little hand. The long awaited Amiga version of the amazing *Wing Commander* has landed on my desk, minutes before this month's deadline.

Overall, first impressions are extremely positive. All the features that made the PC version a world-beater seem to have been included, and even on an Amiga 500 the gameplay is suitably fast and smooth. What will it be like on an Amiga 1200? The mind boggles.

With a recommended retail price of \$99.95, *Wing Commander* is distributed in Australia by Electronic Arts. Keep reading for a full review in this issue!

Amiga Software Shakeup

Just why is it that we can't get hold of *Lemmings 2*? After all, it's released in the UK, and selling like hot cakes. And what about games like *Pinball Dreams*, and its sequel, *Pinball Fantasies*? They get rave reviews in the UK press, but all we ever get to see are the demo versions on coverdisks. Why? It's



Bill's Tomato Game from Pack 1 - distributed by Hot Point Software

Mindscape April Foolishness!

Here's a hot game! If you're a martial arts lover, you should check out Mindscape's new "hit", *The Best of the Best Championship Karate*. And what better way to check it out than to win one of the three copies Mindscape are giving away! This one's a little mind numbing, I'll admit, but here's what you have to do. Printed below you'll see two 11 letter word scrambles. Each of them can be unscrambled in two dif-

a complex question, but software giants like EA and Sega-Ozisoft claim that the Amiga software market just isn't big enough! They're moving more and more towards ordering small scale shipments of Amiga stock "as and when required" - in other words, if you want to play a game like *Zool*, you'll order it, then sit around waiting while they ship it in from the UK.

It's time to switch into hard hitting editorial mode - so here goes! This ISN'T good enough. Yes, I know the Amiga market has been crippled by software piracy. And I know Australia is "small time" in world terms. And I know the Amiga market is small compared to the lucrative console market. And the

ferent ways, to form two perfectly normal English words.

* TTRPPIIEECA

* UTRPONMIEA

Simply unscramble the letters - which is tough, because there are plenty of permutations - then write the four words of your solution on the back of an envelope, and send it to: Mindscape April Competition, c/o Phil Campbell, PO Box 23 Maclean NSW 2463.

growing demand for PC software makes us look a bit insignificant as well. But the fact is, with the arrival of the Amiga 1200 and 4000, Amiga hardware sales are looking very healthy. And if you guys in the softco's don't keep supporting us, we'll all be worse off.

Hot Point Software Launched

Hot Point Software, a newly formed company specialising in Amiga games, has just launched a series of top class compilations through the Australia wide network of Brash's stores. "There's a wide open market," says Managing Director Kevin Davies, "especially as the bigger software companies have turned their backs on the Amiga market." Pack 1 contains *Zool* (Gremlin), *Bill's Tomato Game* (Psygnosis) and *Pinball Dreams* (21st Century), and will retail for \$99. Pack 2 will feature *Lemmings*, *Manchester United Europe*, and *Nigel*

Mansell's Grand Prix. Watch for more news from Hot Point in future months.

A1200 Games Arrive

What does the new Amiga 1200 mean for gamers? Plenty! For a start, it's going to be a whole lot easier to port 256 colour graphics across from PC games. (Irony, isn't it? Last year we were complaining about those shabby ported PC pics, now we're trying to catch up!)

Second, we'll have heaps more speed. The 32 bit processor and memory chips will be able to talk to each other at blistering speed. Parallax scrolling games will be hardware assisted with the new graphics chips, meaning *Shadow of the Beast IV* should really be a treat! And with sprites now up to 64 pixels wide, there's bound to be a whole new world of possibilities for character animation.

EA's new *Wing Commander* is al-

ready designed to run on the 1200, and there's a batch of upgraded titles from Ocean, Microprose, Gremlin and System 3 just waiting in the wings. Stay tuned. Here at ACAR we'll be upgrading to an A1200 hardware platform in the very near future, so we can keep you in tune with all the latest developments.

ACAR Hints Disk

Still haven't got your copy of ACAR's Entertainment Hints Disks? Order your copy now - there's the original (Disk 1) jam packed with tips, tricks and secret codes for literally hundreds of games. Then there's Disk 2, just as full, just as cheeky, and just as much of a bargain. To order your Hints Disk - or disks - just mail a blank disk - or disks - with a large, stamped, self addressed envelope and a cheque or postal order for \$5.00 per disk to Phil Campbell, PO Box 23 Maclean NSW 2463.

Entertainment Letters

A change of deadlines this month meant most of your mail didn't quite make it to the mailbox! Don't give up - if you've written, you'll more than likely make it to print next time. If you haven't written - why not? Entertainment Mailbox is the leading computer entertainment forum in Australia. So why not join in? Simply write to the Entertainment Mailbox, c/o Phil Campbell, PO Box 23 Maclean NSW 2463.

A Happy Hinter

Dear Phil, I would like to thank you for sending me the ACAR Hints & Tips Disk 1 a few weeks ago when I sent you the level codes for *Titus the Fox*. It's extremely well set out and very useful.

Graeme Beaven
Wyong NSW 2259

Ed: Thanks for the comments, Graeme. Don't forget, you can order the hints disk direct (see details on the news page), or you can simply contribute some hints on disk like Graeme did, and receive a free copy of Hint Disk 1 or 2 in exchange.

Entertainment Forum - The Makings of Greatness

Dear Phil, All great games MUST have mindblowing graphics and sound ... WRONG! *Tetris*, for example, is a highly addictive game - like the old adage says, the best ideas are often the simple ones.

Playability is essential. *Shadow of the Beast II* is an example of what NOT to do. Who wants games which are impossible to play? A challenge is one thing, exasperation another. I could only complete this game in cheat mode, removing any sense of accomplishment. Also, after being annihilated 25 times, you get sick to death of going right

back to the start. Games of this size and complexity demand separate levels with passwords, or save game options.

Longevity is crucial too. One of my favourites is *It Came from the Desert*, an enjoyable challenge no matter how often it's played. *Wings* also saw many hard fought missions. The opposite is *Double Dragon II* - I completed this basic punch-up in 48 hours - what a rip off!

Originality is another key feature in a great game. Consider *Lemmings* and *Populous*, which have spawned a horde of clones. Why? Because gamers were delighted to have a challenge that was different! Admit it, scrolling shoot-em-ups are boring. Fresh and creative games will slay them every time.

David Rich,
Caringbah NSW

Ed: Well put, David, and thanks for taking the time to contribute to the forum. I couldn't agree with you more. It looks like you're something of a Cinemaware fan - with good reason. Their games always had real polish - another mark of excellence that you might like to add to your list.

ENTERTAINMENT & HINTS & TIPS

Things have been getting a bit slack this month - so if you want to be famous, send your hints and tips to Phil Campbell, PO Box 23 Maclean NSW 2463. If you send your hints on a disk, we'll reward you by sending back a free copy of ACAR Hints Disk No. 2!

A-Train

Here's some timely advice for A-Trainers, courtesy of Paul Lawrie. Type 'CHEATERCHEATERWIMP' on the main screen with cap locks on and press return. \$1,000,000 is yours plus other little goodies.

Locomotion Level Passwords

Regular tipster Graeme Beaven, from Wyong NSW, helps out with the following pass-codes from *Locomotion*.

LEVEL A - NO CODE NEEDED	
LEVEL B - BOOT	LEVEL C - CHOR
LEVEL D - DORF	LEVEL E - ENTE
LEVEL F - FUSS	LEVEL G - GIFT
LEVEL H - HAND	LEVEL I - IGLU
LEVEL J - JAHR	LEVEL K - KUSS
LEVEL L - LAND	

Troddlers Again!

Last month we published a full list of *Troddlers* team mode and solo mode codes. This month, we've got the codes for War mode, courtesy of Graeme Beaven.

WAR MODE CODES

It's easy! Type in the level of the game you wish to play, from zero to fourteen.

0 ZERO	1 ONE
2 TWO	3 THREE
4 FOUR	5 FIVE
6 SIX	7 SEVEN
8 EIGHT	9 NINE
10 TEN	11 ELEVEN
12 TWELVE	13 THIRTEEN
14 FOURTEEN	

Hall of Fame

A letter which I recieved a few weeks ago came to my notice in the last couple of days. The letter was from Todd Humphries who strongly rejected using pseudonyms and refers to one of our entries as STARE BEAR. If you are out there STARE BEAR, what do have to say for yourself?

A lot of good highscore in this month's issue. Keep 'em coming - send your high scores to Juris Graney, 41 Cameron St, Maclean, NSW, 2463. Please mark clearly whether your scores are for C64 or Amiga.

And remember - NO CHEAT MODES ALLOWED!

AMIGA
ACTION FIGHTER 132,530 Rob Baker
ALERT 359,700 Robbie Baker
ARKANOID 1,052,610 Steven Walter
AMAZED 130,500 Chris Turnadge
ANARCHY 646,560 - Sid Vicious
AQUATIC GAMES 4,170,866 - Phil Cary
AXEL'S MAGIC HAMMER 329,800
Aaron Buscumb
BAAL 134,250 Davo
BARBARIAN II 100% (c) - Sid Vicious
BATTLE COMMAND 334,200 Pete Cain
BATTLE SQUADRON 99,999,999 (c)
Amos Burbridge
BEYOND ICE PAL. 67,626 (c) Chris Turnadge
BIO CHALLENGE 29,000 A Sanderson
BLOCKOUT 85,281 Stephen Lark
BOMB JACK 468,120 Kathy Butters
BUBBLE + 276,850 (c) Chris Toyne
BUBBLE BOBBLE 2,960,980 Kristy Cameron
BUDOKAN 6:08min (c) Mark Sorensen
BUGGY BOY 113,260 Powerhouse Nick
CAR-VUP 484,122 Happy Hacker
CHASE HQ 7,426,060 Pwhouse Nick
CONT. CIRCUS 4,815,390 Dolly
CRAZY CRS 93,622,590(c) R Cameron
CRAZY CARS CHALL 3,000,000,000!!
Michael Summers
CRYSTAL HAMMER 6,787,921(c)
Kristy Cameron

CYBERBALL 475,000 David Marsh
DENARIS 53,900 Peter Evans
DIABLO 1,490 Timothy Johnson
DRAGON NINJA 246,400 R Matthews
DOUBLE DRAGN 962,355 R Cameron
DOUBLE DRAGON II 201,330(c) The Warrior
EDD THE DUCK 5,820 A Gormly
ELIMINATOR 246,570 Greg Munro
EMERALD MINE Lvl 23 (d) T Johnson
FIRE AND ICE 376,750 The Prophet
FLOOD 13,135 Matthew Beetson
GEE BEE AIR RALLY 308,726 R Irwin
GIANA SISTERS 112,480 Adam Annen
GODS 4,244,397 Adam Annen
GOLDN AXE 499.9(c) The Untouchable
HYBRIS 2,934,425 Andy TysonIK+
1,039,200(c) Powerhouse Nick
IMPOSSIBLE MSSH 66,380 D Unwin
IMPOSSIBLE MISSION II 67,900(c)
David Dilkes
INDIANA JONES L.C. c Phillip Nicoll
INDIANAPOLIS 500 37.00sec/
243.24mph Ian Klaus
INERTIA DRIVE 33,600(c) A. Gormly
KARATE KID II 54,000 M Summers
KILLING GAME SHOW 699270 David Thompson
KLAX 4,396,040 Happy Hacker
LEATHERNECK 88,700 T Humphries
LIVE AND LET DIE 96,520 M Beaton
MAJOR MOTION 50,658 O Webster

MENACE 996,481 Kamikaze Andy
MIDNIGHT RESISTANCE 332,610
Chris McNally
MINDWALKER 306,214 P Schumacher
MOUSETRAP 71,977 Davo Rich
NARC 180,800 Damien Carsburg
NECRONOM 1,181,360 - Johnny Rotten
NINJA MISSION 66,528 Chris Toyne
NITRO 283,000 (c) Brett Bannerman
NUCLEAR WAR 990 (c) Paul Rucci
N. Z. STORY 546,695 Embah Beaton
ONSLAUGHT 39,918 Andrew Gormly
OPERATION THUNDERBOLT 166,400
Andrew Gormly
OPERATION WOLF 355,680 G Wilson
OUTRUN 32,150,464(c)Darrin Smith
OFFSHORE WARRIOR 626,345 J Booth
PACMANIA 3,250,140(c)A Burbridge
PINBALL DREAM 398,977,570 P Rucci
PINBALL MAGIC 423,560 Paul Rucci
PINBALL WIZARD 3,893,570 S Hose
PIONEER PLAGUE 35,412 Keir Sooby
PLUTOS 299,000 Davo
POPULOUS 347,990 Michael Summers
PORTS OF CALL \$3,654,944,000
Status 1033 Troy Clarke
POW 612,865 David Thompson
RAINBOW ISLANDS 9,999,999 (c)
Timothy Johnson
RAMPAGE 212,912 Graham Wilson
RICK DNGEROUS II 68,450 S Southurst
ROBOCOP 395,760 (c) Paul Rucci
ROTOX 183,050(c) Faye Doherty
SIDEWINDER 904,350 Sharon E Eades
SILKWRM (H) 9,963,360 (c) R Cameron
SILKWORM (J) 2,369,571 K Cameron
SILKWEED 3,375,400 Faye Doherty
SPACE ACE 24,680 (c) Stare Bear
SPACE HARRIER 210,855,250
Maverick
SPEEDBALL 17,650 Amos Burbridge
SPEEDBALL 2 480-0 Darren Chapman
STARWRS 5,722,822 wve 33 C Mings
STRIDER 175,350 Neil Young
SPR CARS 27 races (c) L Hetherington
SUPER CARS II Hard Level 42 The
Untouchable
SPER HANG-ON 25,042,850 D Worthy
SPER OFF-RD \$4,930,000 G Hingerty
SPR WONDER-BOY 208,900 A Annen
SUPER SPACE INVADERS 814,355
Andrew Hay
SWIV(HEL) 2,108,210(c)R Adams
SWIV (JEEP) 2,417,330 Steve McKinlay
SWORD OF SODAN 403,500 S Begley
TEEN.M.N.TURTS 546,600(c)J Leeken

TEENAGE QUEEN - \$3900 (c) R Biggs
TERMINATOR II 254,960 (c) Paul Rucci
TEST DRV 169,437(c) S Demchinsky
TEST DRIVE 2 659,992 M Summers
TETRIS 65,300 (1417 Lines) Ray 'THE
LEGEND' Brown
TETRIX Level 232 Stephen Lark
THE RUNNING MAN 123,500 D Rucci
THUNDERBLADE 2,034,040 De Moose
THUNDERCATS 522,300 S Southurst
TOWER OF BABEL 25,934 (c)S Lark
TURBO OUTRUN 100,260,819
Matthew Mantle
TURRICAN 1,735,100 (c) Adrian Jenkin
TURRICAN II 3,307,700 (c) Mat Beetson
TV-SPORTS BASKETBALL 192-39 Matt
James
TV-SPORTS FTBL 189-0 D McKinney
TWINWORLD 24,640 Carol Love
TYPHOON 54,255 Owen Webster
U.N.SQUADRON 762,255 (c) Tony
Stojanowski
VIDEO KID 371,050 Andrew Hay
VIRUS 22,637 Jason Dykstra
WHIRLIGIG 28,210 Nathan Allen
WINGS 432 kills Robert Irwin
WINGS OF DEATH 56,670 Robert Irwin
WONDER BOY 381,186,042(c) Kristy
Cameron
XENON II 1,107,280(c) Mark Porta
ZOOM 67,051 Steve Jones

COMMODORE 64

ALLEY CAT 1,101,150 Simon Mitchell
ALTERED BEAST 312,400 Rick Zanker
ARKANOID 930,340 Joseph Wright
ARKANOID 2 756,250 Mean Max
BATMAN 521,360 The Joker
BATMAN-THE MOVIE 1,087,080
Michael Bradley
BANGKOK KNIGHTS 39,600 J
BOMB JACK 521,820 Adam Wade
BUBBLE BOBBLE 6,963,930 (c) D
Gavrilovic
BUGGY BOY 182,790 P Murray
CABAL 194,450 The Joker
CHASE HQ 12,436,129(c) David 'Moir
Jane' Sanna
CHASE HQ II 29,100 (C) Adam Wade
CREATURES 10,123 Adam Malinowski
DAVID'S MID MAGIC 669,150 Joker
DOUBLE DRAGON 35,820 (c) A Prasad
DOUBLE DRAGON II 255,190 Nick
van Heeswyk
DRGN BREED 496,870 Happy Hacker
FAST BREAK 136 to 9 Chris Byrne

GHOSTS AND GOBLINS 325,600 Adam
Wade
GHOULS AND GHOSTS 558,110 (c)
Adam Wade
GIANA SISTERS 287,100(c) A Wade
GRYZOR 228,600 Mean Max
H. MARADONA Level M N Heeswyk
HAWKEYE 280,400 Matthew Inman
IKARI WARRIORS 308,300 J Aldridge
INT. KARATE 139,390 Paul Millward
LAST NINJA II 17m44s (c) David Carter
MIDNIGHT RESISTANCE 28,540 (c)
Dennis Pike
MEGA GIANA SISTERS 328,746
Mean Max
NEMESIS 1,633,200 Adam Wade
OPERATION THUNDERBOLT 78,600
Adam Annen
OPERATION WOLF 776,350 W Diaz
OUTRUN 19,952,780(c) Untouchable
PARADROID 303,125 Matthew Inman
PAPERBOY 103,100(c) John Nunes
PIRATES 143/100 D Steward
POWERDRIFT 872,940(c) Adam Annen
QUE-DEX 639 Chris Byrne
R-TYPE 1,890,210 Atul Prasad
RAINBOW ISLS 7,653,241 A Malinowski
RAMPAGE 180,000 Adam Wade
RICK DANGEROUS 66,280 A Annen
ROBOCOP 237,170(c) Adam Wade
ROLLING THUNDER 417,280 A Wade
SALAMANDER 235,300 Paul Millward
SHINOBI 664,372(c) Winston Diaz
SILKWORM (Heli) 965,200 (c) A Blanch
SILKWORM (J) 244,500 (c) A Blanch
SKATE OR DIE Fstyle 22,850 The Joker
ST FIGHTER(c) 168,900 Adam Wade
SUPER CYCLE 239,840 (c) A Annen
TARGET RENEGADE 330,450 C.
Byrne (clocked)
TEST DRIVE 36,144(c) John Nunes
TEST DRIVE II 249,543 (c) A Batroc
TETRIS 81,613 (1021 lines) The Fly
THE TRAIN 9,500(c) Adam Annen
THUNDERBLDE 1,851,040 M Inman
THUNDERCATS 269,500 Jo Wright
T.M.N TURTLES 4397 Adam Annen
TRAZ 54,560 Dave and Sue Upton
TURRICAN 1,239,040 Adam Malinowski
UNTOUCHABLES 70,230 S Watford
WIZBALL 999,999 (c) G. Beaven
WONDERBY 4,775,470 (c) Lee Walters

Scores followed by (c) indicate that the game has been completed.

Catch 'Em

Laetone Gravolin goes bananas over a platform game featuring a bunch of cheeky chimps. Check out his report.

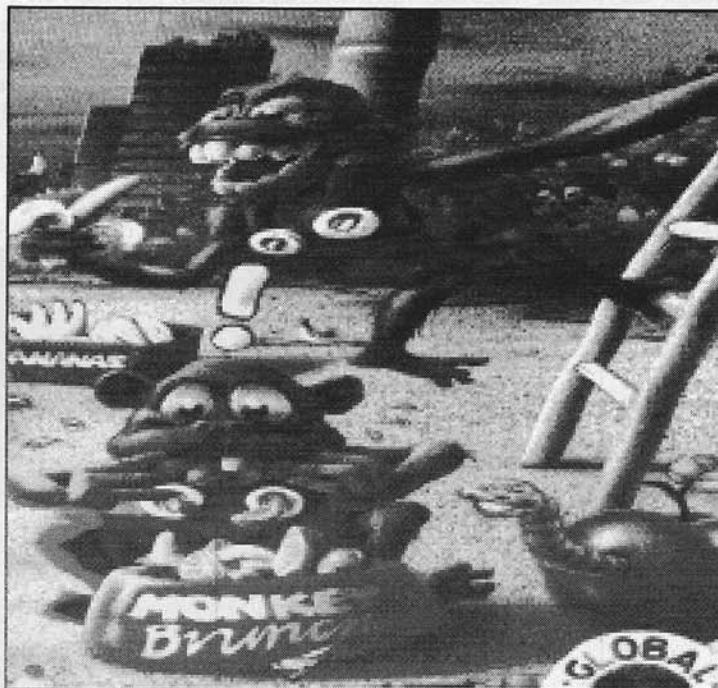
Hey, all you little monkeys out there, feast your beady eyes on this! *Catch 'Em* is a very unusual platform game, with over 35 puzzling levels and everything from nasty small chimps to fully grown gorillas!

The story starts with good ol' Jeff, the local zoo's gate keeper. While he's busy reading his favourite computer magazine (which would have to be *The Australian Commodore & Amiga Review*), the apes decide to take a walk around the countryside. They're running wild in abandoned mines, the jungle, and even in the town. It's up to Jeff to catch them all before his boss finds out!

You play the role of Jeff, and naturally enough, your main aim is to catch all the apes and put them in their proper cages before you run out of time. There are three types of ape. The chimp, a very small frustrating beast to catch; the small gorilla, who moves ladders to different platforms; and the fully grown gorilla - you'll need a bit more than a bat to catch him. Maybe a female gorilla?

Jeff also has his trusty truck at his disposal, which has essential needs for completing the level. There are

jellies, which keep the chimps entertained while you bag them. Then there are some extra bats - you don't want to run out - and a supply of nails, and sealed banana chests which chimps get into. Then there's an inflatable doll, to keep the gorillas occupied while you catch them, and a skull on stick, which scares the chimps away. Levels consist of platforms and ladders and sometimes other obstacles depending which level you are on. To catch the apes you have to stun them on the head with the bat (I don't think this is a game for Greenpeace!) and then put them in the the right cage.



FACTBOX

Catch 'Em is a very fast moving platform game, and it's lots of fun. You'll need to use your head a little, but some razor sharp reflexes will be handy too!

Rating

GRAPHICS:	87%
SOUND:	91%
GAMEPLAY:	89%
OVERALL:	88%

Distributed by Mindscape, (02) 899 2277. RRP \$59.95.

But it's not as easy as it sounds. You have to catch the right apes first. If you catch the small gorilla, he'll stop moving the ladders. If a chimp is on a platform which needs a ladder for you to get to it, you'll be stuck. In other words, this is a game that needs forethought and planning.

Control is via the joystick, and like any other platform game, you can jump, climb and walk. To make the game a bit harder, items like the knock-out bats don't last for ever. You might use it three times before it disappears.

You'll then have to climb back down the network of ladders and walk a long way back to your truck to get a new one, which can waste valuable time. With ten different tunes and great sound effects, the sound matches the gameplay well. The levels also have passwords, which means you can come back to the game and pick up where you left off.

Over all, *Catch 'Em* is a unusual game, and a lot of fun - especially if you like getting up to monkey business.

Wing Commander

The game that wowed them on the PC has finally arrived on your Amiga. Was it worth the wait? Phil Campbell says yes.

Wing Commander is a space adventure of epic proportions. You are based on the huge Space-Carrier USS Tiger's Claw, as part of an elite earth squadron locked in deadly conflict with the forces of the Kilrathi empire. These guys are not only ugly, they're incredibly nasty. War was formally declared back in 2634, but the ensuing 20 years has done little to resolve the conflict - the Kilrathi are a warrior race, and they will be satisfied with nothing less than total dominion.

The game opens with the most impressive title sequence I have ever seen. Remember the feeling you got when you first saw *Star Wars*? That surge of naked excitement? Here it is again. The first thing you'll see is an orchestra, silhouetted against the gleaming planet that dominates the scene through the viewport behind them. The random sounds of instruments tuning fall silent as the conductor taps his baton. And then ... the experience begins.

Converted to the Amiga by Nick Pelling, first impressions are good. The movie style credits are faithful to the IBM original, with scrolling text overlaid on a starry backdrop, with bits of asteroid and smashed space-ship floating serenely into your face.

The credits fade to show the bar in the Tiger's Claw Officers Mess. This is the favourite haunt of off duty pilots, and two of them are sitting at the centre table. The drama of the introductory sound track blends smoothly into a mellow jazz number, just right when you want to relax and sip a few quiet ales. A door at the far end of the bar leads to the briefing room - to go there, simply move the on-screen pointer with your joystick and press the fire button. The briefing

session is beautifully animated, maintaining the movie-like atmosphere of the rest of the game. Watch for the sequence at the end - as the pilots are dismissed and race to the hangar, the animation is superbly realistic.

Moments later, I'm in space. In front of me I can see my knees, my hand on the control stick, and a viewport. Somewhere out there, there's a squadron of Kilrathi fighters - let's go get 'em.

The autopilot is programmed to do exactly that, so in moments I'm face to face with my first enemy ships. It's kill or be killed, and the action is frenetic. A Kilrathi Jalthi class fighter zooms towards me on the screen, growing ever larger. As it nears my ship it veers to the left, its armoured underbelly completely filling my viewport. This is high class stuff - huge ships, high detail and smooth animation all rolled into one.

Gameplay is fast and smooth, even on an Amiga 500. The question that everyone will be asking is "How does it compare with the PC original?" Fair question, because everyone said that conversion to the Amiga was impossi-

FACTBOX

Let's not beat around the bush. *Wing Commander* is simply excellent. Superb. The graphics are first rate, the sounds are nice, and the gameplay keeps you wanting to come back for more.

Ratings

Graphics	89%
Sound	88%
Gameplay	92%
Overall	91%

Distributed by Electronic Arts,
(075) 911 388. RRP \$99.95.

ble. Wrong! Graphics have suffered a little in conversion from 256 colour VGA to 16 colour Amiga bitmap - but not as much as you'd expect. Judicious dithering makes the overall effect more than satisfactory - and above all, maintains play-speed.

A special Amiga 1200 version is already on the way, reinstating the original 256 colours, and running at around four times the speed of the A500 version. I'll guarantee right now, it's sure to make the PC version eat dirt.

Back to the game. I'm deep in space, firing bolt after bolt from my laser canon into the bowels of a Kilrathi fighter. After a number of direct hits, it explodes in a satisfying fireball - I pull away, and turn for home. Another satisfying day at the office!



**There's something nasty lurking there in the shadows,
and fearless Juris Graney checks it out. Yep, it's
another sequel ...**

SHADOW OF THE BEAST III

As a small child, Aabron was enslaved by the Priests of the Beast Lord. He was tormented for years and subjected to an evil programme of will-sapping drugs. He eventually had no purpose of his own and totally belonged to Maletoth, The Beast Lord.

He became the Beast Messenger, a creature possessing great strength and agility, and he soon forgot his human ancestry.

One fateful day as he was passing the sacrificial temple, Aabron saw a man shackled to the altar. He approached, curious.

Aabron was puzzled. He'd seen this man somewhere before. As the sacrificial knife plunged into the chest of the man, Aabron remembered. His father. Salt-water stung Aabron's eyes as he ran from the temple, his mind blazing with thoughts of revenge. It was going to be hard.

Aabron fought bravely and battled hard but to no avail. He failed to destroy either Zelek or Maletoth. On the positive side, he had slaughtered a few armies of Beast ugly-dudes and was rewarded by having some of his humanity returned. The power of the beast

was diminished - but Maletoth still remained a dark threat. Aabron stared into a clear pond of still water to be greeted by the sight of a huge winged demon which swooped viciously down into a hut and stole a baby girl. Aabron's sister. He knew what he must do know, travel to Kara-Moon and rescue his sister.

Zelek was dead. Aabron collapsed and dreamed. A wizened man appeared before him and spoke. "You are indeed a very cool dude. Zelek was strong, but you can only be totally free from his power by defeating Maletoth in a final showdown. IF you beat him, then you will be free from his curse. If not you will perish like all the rest of his minions. So go forth into this desolate land, find Maletoth and whip him black and blue ..." And so begins *Shadow of The Beast III*.

Yep, the final part of the Beast trilogy has finally arrived. And what a ripper it should have been. Alas, *Shadow Of The Beast III* is not what I thought it would have been. The graphics are very similar in all three games, so don't expect any surprises here. The main sprite, though, has changed immensely. He's

now a fully fledged human carrying an annoyingly drab backpack. His main weapon is a shuriken star and his aim is the same as in the last two parts of the story - to kill as many enemies as possible and to survive their petty attacks.

Don't get the wrong idea. *Beast III* isn't all that bad. In fact, it's far better

FACTBOX

Believe it or not, Juris actually liked this game! However, he says *Beast I* and *II* were better in some ways - though *Beast III* holds a strange fascination. It's a game with atmosphere, and an unusual quality that Juris says "it's hard to put a finger on." Gameplay hasn't advanced since parts I and II, though, and this is the let-down. In the end, *Shadow of the Beast III* offers mid-range value for money if you already own the earlier games. But if you haven't sampled the beast before, rush out and buy this one!

Ratings

Graphics:	95%
Sound:	95%
Gameplay:	65%
Addictiveness:	87%
Overall:	78%

Distributed by OziSoft (02) 317 0000. RRP \$69.95.

than most games you'd meet in a month of Sundays. Like all Psygnosis products, it's polished till it gleams. Graphics and animation are impeccable. The music is catchy, and the sound effects are brilliant.

The only problem is the game play is the same. You have the same moves, nearly the same enemies and the same kind of traps. Push buttons here, pull levers there, kill this ugly dude, kill his mate as well. It's simply more of the same good stuff - which, when you're expecting perfection, is just a fraction disappointing.



Feel like playing trains for a while? Now you can do it in style, says Phil Campbell, as he checks out the latest Maxis "sim" ...

A-Train

There are "train spotters" who spend their idle hours scribbling every passing engine number onto their rain sodden pads. I'm not one. Then there are "model railroad nerds," who fill their guest rooms and hallways with tiny tracks and model mountains. Not for me, thanks.

Even so, railways hold a strange fascination. "Trains are wonderful," said Agatha Christie. "To travel by train is to see nature and human beings, towns and churches and rivers, in fact, to see life." She was right.

A-Train, the latest "sim" from Maxis Software, captures something of that fascination. And it goes further. In *A-Train*, you don't just travel by train. You build the railroad. And you don't just SEE the towns and churches - you build them.

In fact, *A-Train* offers a three-way challenge. It starts out as a railroad game. Then it turns into a city building game. Then it becomes a financial game - if you manage your railroad and your city well, you can borrow from the bank, invest in real estate and dabble in the stock market to build a huge financial empire.

Sounds impressive. And it is. Better yet, *A-Train* makes good use of your Amiga hardware. If you're running a high-res, flicker fixed Amiga, you can load the game in high resolution mode. You'll see more of the countryside in what can only be described as a top-class display.



The opening screen shows a country village in three dimensional isometric projection. It's a lush green chequerboard of fields and forests, dotted with small, bright-roofed buildings. A railway track cuts through the screen from east to west, and a lonely train plies back and forth dumping small piles of freight at the village station.

Extending your empire is easy. You start out with a small credit balance at the bank, and a palette of control icons arranged down the left side of the screen. Let's lay some track. Click on the track icon, move your pointer onto the main screen, and start dragging - new track follows your path, and your bank balance drops correspondingly.

New tracks need new trains. So now it's time to buy some rolling stock. Seasoned Train Spotters will be at a distinct advantage here - a new menu screen shows a baffling array of 19 different train and carriage combinations. I choose a humble three-car freight train, hoping to get my business off to a conservative but stable start.

A few more mouse clicks has my train on the rails. A fun-to-use scheduling screen displays a small scale route map, on which you can set each switch point and watch a "test run" - a tiny dot darting around the miniature track. Okay? Let's run.

FACTBOX

A-Train is a top class train sim. Originating in Japan, the game has been adopted by Maxis, famed for their "Sim-City" series. And the guys from Maxis sure know how to pick a winner! It's slick, it's neat - and if you've got the right hardware it's even high-res. Combining business, railroading and city building, *A-Train* is a sure fire winner.

Ratings

Graphics:	88%
Sound:	73%
Gameplay:	83%
Overall:	84%

Distributed by Electronic Arts
(075) 911 388. RRP \$89.95.

The *A-Train Construction Set*, an add-on disk that allows you to design new games and customise scenarios, retails for \$49.95.



Add some stations, then build some houses and factories - again, it's all controlled from the menu sidebar. When things really start booming, try a sporting complex or a fun-park. As you lay them out on the screen, the city comes to life before your eyes.

By the end of the six months, I have to confess that my balance sheet doesn't look too good. Revenue from railroad operations stands at just \$2,270, while my expenditure has been \$1,056,616. My subsidiaries aren't doing much better. In fact, my overall operating loss for the year to date stands at a worrying \$4,781,843. Mmmm ... must leave me well qualified for a job with the State Rail Authority.

Overall, *A-Train* is a first class game. With its delightfully detailed 3-D graphics, and its easy to learn but complex to master controls, this is a game that outsims the celebrated *Sim-City* - especially if you're a railroad freak!

Do androids dream of electric sheep? Does Andrew Gormly dream of bouncing pinballs? He does since he playtested

Pinball Dream S

In a world of computing that is continuously racked with controversy and debate, there stands just one thing in my mind that is certain. Well, almost. That one point is that the world of Amiga music is ruled by a Swedish group known as The Silents. Many of their excellent demos with absolutely superb music are available around the PD traps, either from Bulletin Boards or your local PD firm - they're well worth a listen. However, topping one area of the Amiga was not enough for The Silents, who renamed themselves Digital Illusions and settled a deal with 21st Century Entertainment. Turning their remarkable talents to coding an entire game, they pulled out one that has taken the European market by storm and could easily do the same in Australia: *Pinball Dreams*.

It is at this point in reading the review that most old hands with a Commodore machine will throw down the magazine in disgust and turn up the cricket. Certainly, I would be the first to admit that virtually all attempts to convert the fast and furious action of the pinball table to the computer screen have been nothing more than dismal failures. Even my old favourite on the C64, *Night Mission Pinball*, fades into insignificance when compared to the real thing. Before you stop reading, however, there's something I have to tell you - this time it's different.

Pinball Dreams is the sort of debut game that any coding group would happily strangle someone in a spiked collar for. From the moment

the golden Digital Illusions logo appears on the screen, you can tell that this game is a winner. When the credits begin and then transform into the menu, pause a second to have a listen to the music. My favourite tune in *Pinball Dreams* is the title track - so much so that now I've even put it on tape and listen to it almost daily. This incredible level of sound and music quality can be heard again and again throughout the game, and it becomes easy to see why The Silents are acclaimed as the world's best Amiga musicians.

From the main menu, you can select one of four tables to play on. Perhaps three disks and six tables might have provided more variety - a problem that will be addressed in the forthcoming sequel, *Pinball Fantasies*, due very soon now.

The tables themselves are masterpieces when it comes to reality and attention to every conceivable detail. Tunnels, mushrooms, ball-traps, bonus lights and dividers have all been faithfully con-

FACTBOX

Pinball Dreams will be the standard for computer pinball games for a long time to come - or at least until the official release of the sequel, *Pinball Fantasies*. You might find the four tables lacking after a while, but this is the one you can always dish out to amaze your friends and confound the Amiga critics.

Ratings

Graphics:	89%
Sound:	96%
Gameplay:	84%
Overall:	90%

Distributed by Hot Point Software (075) 348 045 as part of their first Amiga Game pack. Bundled with *Zool*, and the excellent *Bill's Tomato Game*, the pack retails through Brash's stores for a recommended \$99.

verted from the machine sitting in the deli down the road. These extras prevent the game from simply becoming one in which you lash out at the ball with the flippers as soon as it comes within range. Instead, it is a tactical game in which the ball must be hit into certain places in order to score bonus points and the elusive extra ball. The graphics

are excellent and very well defined. In order to fit in to entire length of a pinball table, the screen scrolls a little up or down whenever the ball is in the lower or upper part of the table. Your input on the pinball table, the flippers, are controlled by either the shift, Amiga or Alt keys. The system of gameplay is a delight to use - you can even bump the table! *Pinball Dreams* really does take a moment to learn but a lifetime to master. Admittedly, pinball games aren't for everyone, but this is the one to try your hand at. Good luck and may your table never tilt!



Non-Role-Player Ken Simpson is absolutely enchanted by a role playing game that takes a somewhat more subtle approach. Read on as he puzzles through ...

curse of ENCHANTIA

Young boys falling into the hands of evil witches who want to subsume their personality for their own evil purposes is a theme I come across every day. (Ed: ??) So when I received the latest offering from Core Design I knew I would be in my element.

Curse of Enchantia is a huge dungeon game. It comes on six disks, and is absolutely overwhelming in its scope. I remember when *The Colossal Adventure* was pretty hot on my old 64. Typing in commands from a very limited vocabulary, never knowing the right syntax and just hoping a lot.

Curse of Enchantia is one of the better examples I have found of how the genre has advanced.

Booting up was very simple with one small glitch. They have numbered the disks wrongly either in the program or on the disks themselves. Either way when the boot sequence asks for disk one, make sure you slip in disk two.

Leaving this aside, I have found that in this sort of game the designers usually go overboard. Garish unbelievable graphics and over the top sound. The graphics and animation in *Enchantia* are among the most tastefully executed I have seen with beautiful walking movements. And the sound is outstanding. The gentle plink of drops of water

in the caves and dungeons are delightful and add a great ambience to the game. The voices are digitised and of high quality. Just great!

However I am always in two minds about game control in these things. Core Design have gone for the more common iconic menu where there are pictures representing certain actions which you click on to perform them. Movement is basically by mouse pointing and clicking. The problem is that I don't find the icons particularly intuitive. I just have to have the manual open next to me all the time. It slows it all down a bit and makes it less than ideal. However, the beauty of this system is that you know the range of options available to you. Much easier than "Get" "Get what?" "Get key" "I don't understand the word 'key'".

I can't help comparing all adventure games with that original one. In *Adventure* there were plenty of puzzles which were at times very difficult, but all in the end eminently solvable. Perhaps I think this because I solved them all! In *Enchantia* though, I am stuck. After a couple of hours of playing I still couldn't get out of my dungeon, though I did get out of my chains. Unfortunately the price of clever puzzles is that those of us who are a bit thicker don't always solve them! It is so easy to get discouraged when

FACTBOX

Ken liked *Enchantia* heaps! The graphics were delightful, and the digitised sound effects were incredibly atmospheric! When he started out, he'd never enjoyed a role playing adventure - and now he's hooked. What more can we say?

Ratings

Graphics:	85%
Sound:	84%
Gameplay:	82%
Overall:	83%

Distributed by OziSoft (02) 317 0000. RRP \$69.95.

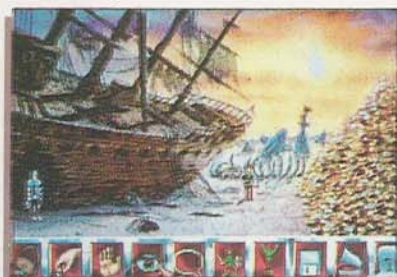
you aren't getting anywhere.

In the end, I got out, having persevered much longer than I usually would have! It says something about the way the game is put together that it could stump but not squash me. When I escaped the dungeon, there was a great feeling of satisfaction - and the game just keeps getting better!

The manual is adequate at 16 pages, though the screen shots are basically woeful, you can get a good idea of the various options by careful study and comparison with the screen. Control can be by mouse or keyboard or joystick. I found the mouse control more to my liking.

Overall, I think this is a winner. In a games world swamped by D&D sorts of games, this one has real class and is worth a good long look at. I am enjoying it immensely and that is saying a lot when in general, adventure games leave me pretty cold.

One final hint ... try yelling for help in the dungeon.



MICHAEL SPITERI'S

Adventurer's Realm

Welcome to another month of the Realm - the section of the mag dedicated to helping out those people stuck in adventure and roleplaying games on Commodore computers (from the Vic-20 to the Amiga and PC range). If you are stuck in an adventure game, you can write to one of the many Clever Contacts distributed across the nation, you can ask Kerrie to send you some of the Realm's free hint sheets, or you can drop your problem to me - if I can't help you directly, your problem will be published here! Of course, helping people isn't the only thing we're about here at the Realm - you can send in your

views, complaints, hints and tips and games to sell or swap.

The address to write to for anything to do with adventure games is: Adventurer's Realm, 12 Bridle Place, Pakenham, Vic 3810.

Kamikaze Andy resides in his Dungeon, and as well as reporting each month on the hot new RPG and adventure releases, he is the main contact for any RPG problems (don't ask him for hint sheets!) His address is: Realm's Dungeon, PO Box 1083, Canning Vale, WA 6155.

Always enclose a stamped addressed envelope just in case a reply is needed.

Realm's Trading Post

This is the part of the Realm where you can swap, sell, or buy old and new adventure games. If you are a software pirate, we do not want to see your games here.

Doug Smith of 19 Hibiscus Avenue, Brooms Head, NSW 2463 is clearing out some old software, in fact, 45 original, legal, mint condition games with boxes and docs for between \$4 and \$25, however Doug would prefer to swap the titles rather than sell. Doug is after *Mortville Manor*, *Colonel's Bequest* and *King's Quest I*. Write to him for a list of what he has to offer.

Greg Bell of 12 Greenhill Avenue, Figtree, NSW 2525 is in the market for *Space Quest I*, drop him a line if you have one.

Wayne Cook of 71 Victoria Street, Toora, Vic 3962 has *Knight of the Legend*, *Champions of Krynn*, and *Deathlord* for the C64 at \$25 each. Write to him or ring him on (056) 86 2448.

Matthew Armstrong (see Clever Contacts for address) is in the market for the latest version of *Space Quest I*, as well as the *Zork* series. He has *Indy*, *Monkey I*, and some of his own AMOS games to swap.

Matt James of 26 Fernyhough St, Nth Lyneham, ACT 2602 has *Civilisation* for \$50, *Castles* for \$35, and *Cyberball* and *Junior Typist* for \$15 each. All offers are welcome and if you want to swap please write to Matt. All titles are in brand new condition.

Free Hint Sheets

Kerrie, the Lady of the Realm, has the free hint sheet distribution centre running as efficiently as ever, so don't hesitate to write to her asking for up to four of the hint sheets listed below. However, you must enclose a stamped addressed envelope or your request will end up in the free hint sheet disposal centre (i.e. the bin). The free hint sheets available are: *Monkey Island 1*, *Monkey Island 2*, *Space Quest 3*, *Space Quest 4*, *Wonderland*, *Larry 3*, *Champions of Krynn*, *Kings Quest 5*, *Pool of Radiance*, *Zak McKracken*, *Zork 1*, *Zork 2*, *Zork 3*, *Bards Tale 1*, *Bards Tale 2*, *Bards Tale 3*, *Hitchhiker's Guide to the Galaxy*, *Guild of Thieves*, *Jinxter*, *Pawn*, *Corruption*, *Faery Tale*, and the 1993 Clever Contacts Listing.

Realm's Hint Books

Unfortunately, these are not free (cos it costs a lot of money to print them), however they are quite cheap considering what you get. Look out for *Computer Adventure Games Hints & Tips* (The Second Adventurer's Realm Hint Book) at your newsagent, and if you can't find one, give Darrien a ring on (02) 398 5111. \$10 buys you hints and tips for 25 top-notch adventure games, plus pages and pages of mapping sheets. Look out for the big green dragon on the front cover.

If you are lucky you might still be able to get a copy of the first *Official Adventurer's Realm Hint Book*, that featured hints and tips for over forty games. If you would like one, send a cheque for \$9.00 to Realm's First Hint Book, 12 Bridle Place, Pakenham, Vic 3810.

Realm's Clever Contacts

Andrew Gormly of PO Box 123, Walkerville, SA 5081 is a Regular Realmer who would like to be a clever contact. Andrew can help out in ... *Bard's Tale 1, 2, 3, Zork 1, 2, 3, Blade of Blackpool, Cyborg, Deadline, Death in the Caribbean, Enchanter, Gruds in Space, Infidel, Planetfall, Sorcerer, Starcross, Suspended, Ultimas I, II, III, IV, Witness, Jinxter, Pool of Radiance, and Hillsfar.*

Allan Mills of 36 Pickworth St, Holt ACT 2615 is already a Clever Contact, but can now add the following games to his list ... *Indy & Fate of Atlantis, Conquests of Camelot, Countdown, and Eye of the Beholder I & II.*

David Marjanovic of PO Box 342, Revesby, NSW 2212 would like to update his Clever Contact entry with the following games ... *Space Quest 1, 2, 3, Manhunter New York, Manhunter San*

Francisco, Deja Vu 1, 2, Shadowgate, Uninvited, Monkey Island (thanks to Mark Armstrong), *Arazoks Tomb, Guild of Thieves, Operation Stealth, Zak McKracken, Indiana Jones and the Last Crusade, Larry 1 & 2.*

Matthew Armstrong of 11 Harcombe Street, Bell Post Hill, Geelong Vic 3215 would like to add *Colonels Bequest, Curse of Enchantia, Dagger of Amon Ra, and Battletech* to his never ending list of games.

Shane Robertson of 14 Sonoma Road, Budgewoi, NSW 2262 would also like to update his Clever Contacts entry with the following games: *Adventureland (Public Domain), African Adventure, Alien, Shifting Sands, Buck Rogers I, Shard of Inovar, Rigals Revenge, Return to Eden, Red Moon, Price of Magik, The Pawn, Murder on the Waterfront, Dungeon (Public Domain).*

David McKinney and Michael Walsh unfortunately have to drop their Clever Contacts services due to, among other reasons, time constraints. David was also a bit disappointed with the bluntness of some of the letters he received. Remember people, the Clever Contacts system is not just a help service, it's also a communication service, and all the Clever Contacts are volunteers. Anyhow, many thanks to both David and Michael for their excellent contributions in the past.

If you intend to use a Clever Contact, send them a nice letter asking for help and make sure you enclose a stamped addressed envelope and some dough to cover any expenses incurred. Finally, a big thank you to all of the Realm's Clever Contacts for doing a great job. (Don't forget, a free Clever Contact listing is available from the Hint Sheets Dept).

Allan Mills of Holt in ACT wrote a lengthy letter regarding bugs he found in his not so cheap IBM version of *Darkside* by Microprose. Unfortunately, space restrictions permit me from publishing his letter, however Allan is very disappointed that Microprose seem to be labeling these bugs as 'features'. A lot of these bugs are to do with how the characters think and fight. I'd be interested in hearing views from both Amiga and IBM players of *Darkside* on what they think of how this game operates.

Andrew Gormly of Walkerville in SA continues our nostalgic discussion on classic adventure games ... "As Stuart George pointed out, too many of the proper parser driven games have been replaced by point-n-click ones where the problems mostly lie in getting the mouse pointer to rest upon the one or two pixels that correspond to a necessary item on the graphic screen. <sigh> Ah well, even if the days are dying out they still live on in our hearts and memories. <deeper sigh>. Enough reminiscing - keep up the good work!"

MS: <sniff> Thank you <sniff> Andrew, for that <sniff> touching ending to your <sniff> letter. I don't think I

Realm's Adventure Chat

can look at one of those classic adventure games in the <sniff> same way any more. <baaaaahhh>. Thanks for the *Ultima* hints, Andrew.

Wayne Cook of Toora in Victoria writes: "I think that Adventurer's Realm is great as it is the main reason I buy ACAR (Mike: Why thank you, Wayne). Do you know if there are any computer role playing appreciation groups in Oz. If not, I think there should be. In fact, can you mention that in the adventure chat section and if people think it would be a good idea, to contact me. I personally think it is a good idea that people with similar hobbies create a group, much can be gained. I know I'm asking a bit, but could you include that I am looking

for Amiga Role Players as pen friends to swap letters, hints, games and so forth."

Mike: Wayne, your requests have been aired. I am sure there are quite a few RPG groups out there, though it should be more fun starting your own. I'm also sure that quite a few of the Clever Contacts would make great pen friends, so drop a line to a few of them.

Doug Smith wrote in asking if anyone had hints for *Maupiti Island*, in particular getting into Lucie's room. I thought this would be a great opportunity to remind everyone stuck in this game, and *Mortville Manor*, about Noel McAskill's offer of hints. Noel wrote to Lankhor and received Jerome Lange's diary containing hints and tips to both games. You can write to Noel at 9-18 Vega Street, Revesby, NSW 2212.

A letter entered the Realm the other day, but it had no name. Anyhow, this letter asked when *Space Quest 5* will come out for the Amiga. Well, there is a rumour going around that Sierra are not going to release new adventure games for the Amiga, which means the chances of *Space Quest 5* being available are looking pretty thin. I will investigate this

matter further - hopefully it is just a rumour, and nothing else.

Regular Realmer David Couche will no longer be a Regular Realmer, as he states in this letter ... "I have cancelled my subscription to *Australian Commodore and Amiga Review* but I probably will subscribe to its sister magazine *Australian PC Review* instead. I don't want to lose contact with your column, which I believe should be printed in both magazines. To support this suggestion I'd like to point out that many of the games mentioned in your column are only avail-

able in PC format. Hopefully you can suggest this to the editor of *PC Review*."

Mike: Thank you David for your letter, and for the support you have given the Realm over the years. You are correct in stating that a lot of the games mentioned in the Realm are PC format only, but remember that, although this is a Commodore magazine, Commodore manufacture PCs as well, and a lot of the Amiga people who read this magazine also own or use a PC. Even though I write the game reviews in *Australian PC Review*, the magazine is not aimed

specifically at the game players market, and space is at a premium in the magazine, though I have no doubt a column like *Adventurer's Realm* would receive a considerable response. We'll think about it, David.

Finally, a big thanks to A Tyson of Plumpton in NSW for the solution to *Lure of the Temptress*, and to Stuart George of Springvale in Victoria for the hints and tips for *Spellcasting 301: Springbreak*.

Also thanks to David Couche for the hints for *Rise of the Dragon*.

Help, Help & more Help or the Smart Adventurers Dept.

David Marjanovic comes to the rescue of Darren Mummery who was stuck in *Operation Stealth* ... "Use the pen on the lock in the cage then use your watch on the west wall and then the east wall. Move towards the right then open the grill."

Doug Smith offers some help to Jen Howell who was stuck in *Cruise for a Corpse* ... "To advance the clock you must find certain clues. I assume it is 4.40. Use the crowbar on the crate. Find can and open it with can opener. It should be 4.50. Go to the engine room and look at the top of the drum beside the butler's cabin. At 5.00 go and watch the film. This is tricky, so hang in there." Write to Doug (see Trading Post for address) for additional clues.

Doug also offers help to Geoffrey Boddington who was stuck in *Conquests of Camelot* ... "To escape the desert: have you got the info from Al-Sirat on the Goddesses and their symbols? Ig-

noring Jabar on the hill above the town, head on to the next screen (box canyon) and go e.s.e.e.n. You'll need to diverge here but return to his point and keep heading north to Jerusalem." The problems you meet on the way are for you to solve, though you can write to Doug for some additional help.

David Couche offers some help for Daniel Hill who was stuck in *Rise of the Dragon* ... "Use your wire tester. Attach the red alligator clip to the left battery terminal at the top of the screen. Attach the blue clip to the grounding strap wrapped around the conduit near the bottom of the screen. Lastly, take the yellow clip and clip it onto the second terminal up from the bottom of the lower termination block. If the clip is closer to any terminal other than the one you want, you will be shocked. Save your game often!"

Daniel Hill was also stuck in *Valkyrie 17*. Stuart George suggests moving the dustbins to enter the castle.

Stuart George also has some help for Keith MakInlay who was stuck in *Ultima V* ... "The first room in Shame is blocked, so throw some magic axes at the rocks to the south edge, which should reveal an exit."

Problems, Problems & more Problems or the Troubled Adventurers Dept.

The nameless letter mentioned in Adventure Chat was also stuck in the new Sierra game *Dagger of Amon Ra*. It wants to know what to do in the furnace room, and how to wake up Steve.

David Marjanovic of Ravesby in NSW is stuck in *Hook*. David writes. "How do I get the money necessary to buy the magnet and how do you get rid of Tinkerbelle before you go onto Hook's ship? I have been told that you can find the money in the three pots on Hook's ship, but when I search there I cannot find anything."

David is also stuck trying to get past the second chasm on the cliff in *Curse of Enchantia*.

Greg Bell of Figtree in NSW is stuck in *Space Quest IV*. He has traveled back to *Space Quest I* where he is currently stuck. He's kicked over the bikes and got the matches, but what next?

Cassandra Mackersey of

Latham in ACT is stuck in an adventure game called *Leander*. She is having a problem with level 2.5 - after she has collected everything and disposed of two snakes, she cannot find the snake's skull to activate the transporter. Any takers?

Daniel Cannon is stuck further in *Monkey Island 2*. He writes ... "I am up to the part where you meet LeChuck under Dinky Island. I have got his underwear and his beard bits and everything else I can find down there, and now I am stuck. By the way, this bit is in easy mode. Then, in Normal mode, how do I get Guybrush to open the coffin? When I tried he just said he wouldn't. What do I do to get behind the waterfall? I know there is a hole there but can't do anything with that dang pump. Even if I do find all four map pieces, who do I give them to since I stole Walley's monocle? Thanks."

Michael Harrison of Christies Downs in SA writes ... "I have a problem with *Ultima 6*. When trying to make a new character, it tells me to run the install program, but after checking all the files on the disk, I can't find it. Does anyone know where it is and how to load it?"

The Dungeon by Kamikaze Andy

Greetings for the auspicious month of April! Many of you news hungry RPGers would have devoured all the news on the latest from the Winter CES show in Las Vegas, but perhaps some of the more exciting and incredible news was not given front page attention. So for this merry and foolish month of April, the Dungeon reveals all!

First, the return of Steve and Steve, perhaps the most famous double act since Laurel and Hardy! Yes, Steve Wozniak and Steve Jobs, legendary figures in the history of personal computing, have decided to team up once more, and this time, their sights are firmly targeted on the RPG genre.

Steve & Steve plan to start up a new firm that will sell portable Virtual Reality machines (consisting of gloves, lightweight goggles resembling Ray-Bans, and a small belt/backpack) for under a thousand dollars. Software will come in the form of cartridges that plug into the backpack. Steve (and Steve) were ecstatic about the way they managed to reduce the size and cost of "consumer friendly VR" and promised that the first few products would be RPGs "that would blow your minds out". Those Yanks sure have a way of understating things! Look out for *Ultima IX VR*, *Might And Magic VI VR*, *Bards Tale V VR*, and possibly *Mighty Zork VR*! The mind boggles!

Lord British (aka Richard Garriott) announced that, following the multimedia success of *Ultima* (with novels, board games, clothes, and a cartoon series already in production), the first *Ultima* movie will hit the screens next year! The film will enjoy a simultaneous release with the latest *Ultima* on PC or VR (given Origin's reputation for product delays, its hard to say whether *Ultima VIII* or *IX* will be out at that time). Lord

British has apparently set his heart on Tom Cruise playing the Avatar, and Sean Connery taking over the revered throne as Ruler of all Britannia.

Other possible co-stars include Dustin Hoffman (Iolo), Winona Ryder (Mariah), Steve Martin (Shamino) and maybe, just maybe, ol' Arnie Schwarzenegger himself as muscular Paladin Dupre! Guess who the bad guy is going to be - here's a clue: He's suited for "Cannibal"-istic roles.

Mega RPG

It all started with *Bard's Tale* - the first RPG to allow the "importing" of characters from other games. Now Interplay, creators of the series, propose to embark on joint ventures with New World Computing (*Might And Magic*), Sir-Tech (*Wizardry*), SSI (*Eye Of The Beholder*), and Sierra (*Adventures Of Willy Beamish*) to produce a huge MEGA-RPG. All these companies will bring out different "chapters" of a RPG story set in a common land (tentatively titled "Fantasia"), so with your party of adventurers, you could explore the dungeons designed by Interplay's Brian Fargo before taking a few paces east into the dungeons designed by the warped mind of Sierra's Roberta Williams. With each publisher promising two chapters per year, that's ten different scenarios on the same world! So far the plans for this project have progressed without a hitch, except for the proposed title of the series. The last I heard, it was *The Bard's Mighty Magical Beholding Eye Featuring The Wizardry Of Willy Beamish ...* or something like that.

Speaking of SSI, their marketing boys have gone wild again - this time they've snapped up the rights to more than twenty (20!) different "brand names" and hope to unleash the first of these by the end of the year. SSI gained its RPG reputation from its productive (some would say excessive, but they're probably jealous marketing guys from other softcos who didn't pick up the official AD&D licence when they had the chance) use of AD&D.

Watch out for games based on techno thriller Tom Clancy's Jack Ryan charac-

ter (from *Hunt For Red October*, *Patriot Games*, etc), Kevin Costner's *Bodyguard* character, Jackie Chan's *City Hunter*, Ronald McDonald and his McDonaldLand pals, Garfield and Heathcliff (together! Dynamite!), hot new singing duo Leon And Aaron: Ichiban!, and finally, in a pretty strange choice, a bunch of RPGs using scenarios from Barbara Cartland romances. (Ed: Like *Diana - The Mini Series*?)

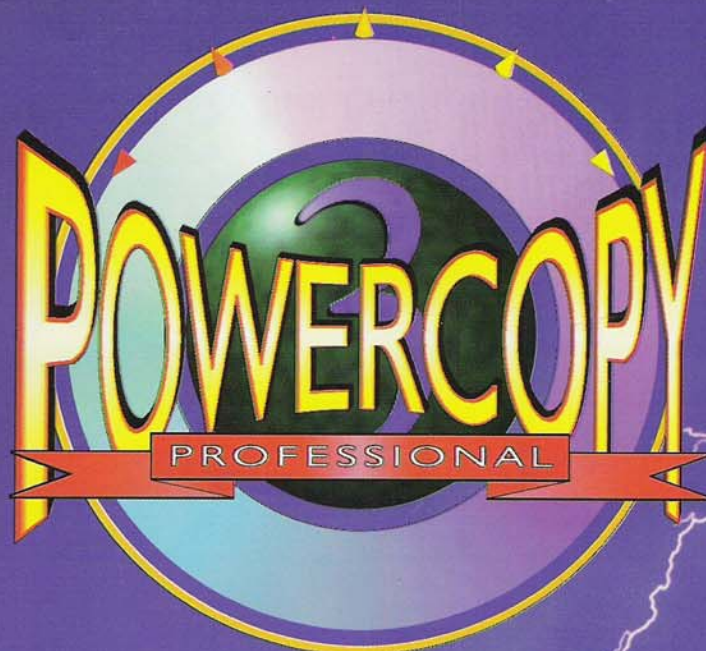
Finally, some short snippets from other parts of the CES that may interest adventurers/RPGers: Sierra buys out another company (this time, the victim ... er, lucky publisher, happens to be Broderbund) but there are rumours that a certain giant RPG software publisher (let's call it the "Ultimate" company around) is rubbing its hands in anticipation of taking over Sierra!

Infocom resurfaces for the umpteenth time, but instead of publishing adventure games, the new guys in charge have decided on a different direction. Their first independent product, *Cornerstone Returns*, is being promoted as the very latest and greatest in spreadsheets, with twice as many applications as before. At this stage, the company plans to release versions for the Apple II, VIC 20, and Osborne PC before even attempting to crack the more challenging C16 and IBM PCjr markets. All the best, guys!

Electronic Arts, after acquiring Origin via a stocks 'n' shares trade deal, suddenly discovered that they had in fact traded five shares for every Origin share, and that it is now Origin who owns Electronic Arts. Lord British has assumed CEO position, with Chris Roberts taking over as VP. Former CEO Trip Hawkins has returned to Harvard to undertake another course, this time in "How To Build Up A Software Empire And Keep It Too". Trip will be getting part-time tutorials from one Steve Jobs, who moonlights in Harvard after a tiring day at the VR machine.

But perhaps the most exciting news of the month is the fact that we're finally into April, which suggests, of course ... heh heh heh ... GOTCHA!

CYA next month with more "exclusive" material (most of them verified, hopefully!)

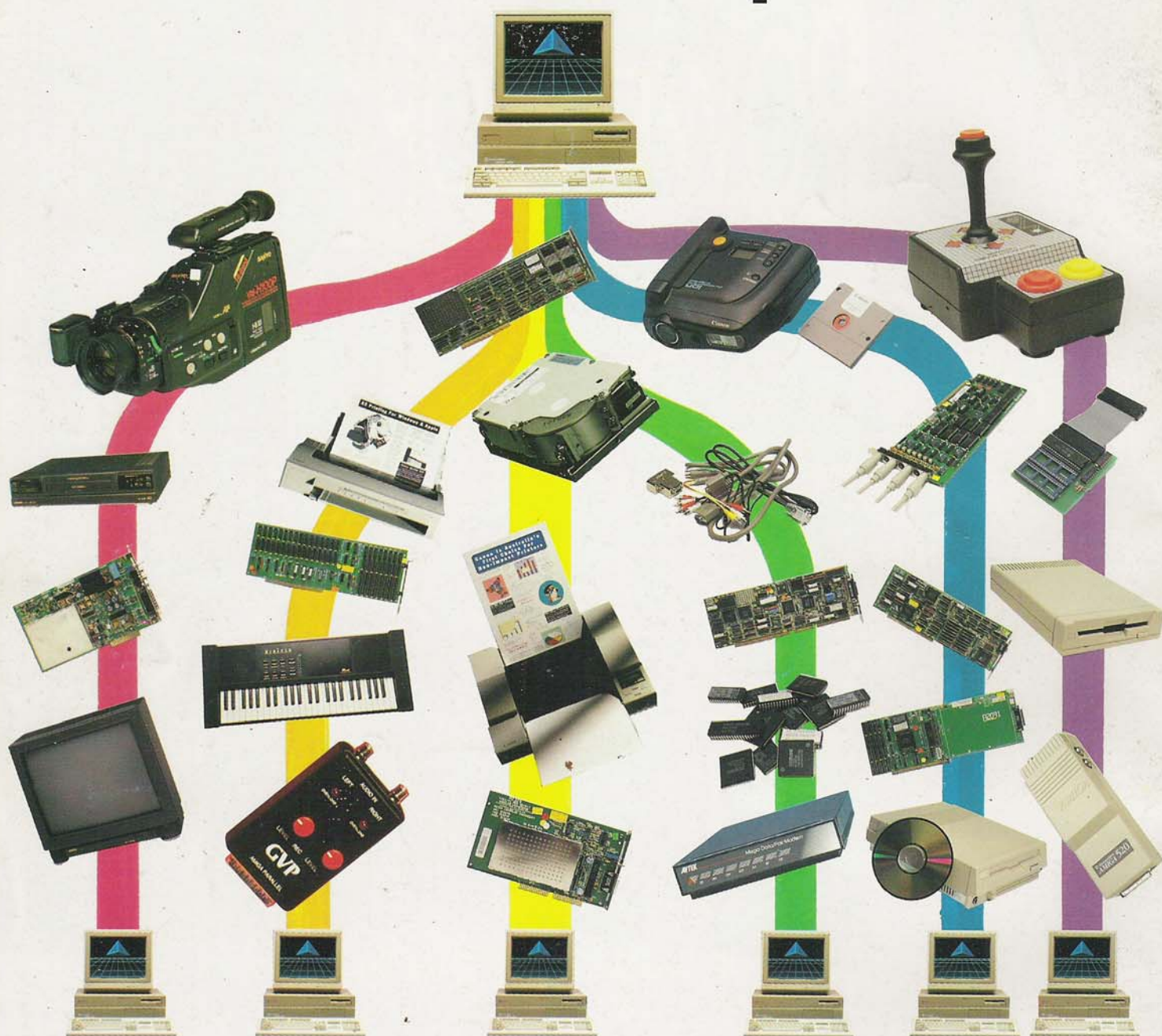


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